Study Guide 2019-2020

DEPARTMENT OF BIOMEDICAL SCIENCES

Divisions

Aesthetics and Cosmetic Science
Radiology and Radiotherapy
Medical Laboratories Science
Dental Technology
Optics and Optometry

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1. Introduction

The Department of Biomedical Sciences, of the School of Health and Care Sciences, at the University of West Attica, was recently established by the collaboration-merge of the former Departments of 1) Aesthetics & Cosmetic Science, 2) Radiology and Radiotherapy, 3) Medical Laboratories Science, 4) Dental Technology, and 5) Optics and Optometry of the School of Health and Care Professions of the Technological Educational Institute of Athens.

The aim of the Department of Biomedical Sciences is to provide trainee scientists with high quality education in order for them to develop a high-level of proficiency, skills and abilities within the broader field of Biomedical Sciences.

The Department Undergraduate Curriculum has been developed according to the international curricula standards and approaches, following a recent search in every cognitive subject of the new divisions and taking into account the guidelines of the Hellenic Quality Assurance & Accreditation Agency.

The Department covers subject areas of the broader and ever-evolving scientific field of Biomedical Sciences and their Applications. It is comprised of:

- Five (5) divisions of advanced semesters (Aesthetics & Cosmetic Science, Radiation and Radiotherapy, Medical Laboratories Science, Dental Technology, Optics and Optometry)
- A declarative element of the provided degree is the Division's title

Students entering the Department attend three (3) semesters with common core courses in Biomedical Sciences.

Subsequently students choose one of the following divisions:

- ❖ Division- Sector **"Aesthetics & Cosmetic Science"** Upon successful attendance, students graduate with the degree of "Biomedical Sciences, Division: Aesthetics & Cosmetic Science" with duration of studies (8) semesters.
- ❖ Division- Sector **"Radiology and Radiotherapy"** Upon successful attendance, students graduate with the degree of "Biomedical Sciences, Division: Radiology and Radiotherapy" with duration of studies (8) semesters.
- ❖ Division- Sector **"Medical Laboratories Science"** Upon successful attendance, students graduate with the degree of "Biomedical Sciences, Division: Medical Laboratories Science" with duration of studies (8) semesters.
- ❖ Division- Sector **"Dental Technology"** Upon successful attendance, students graduate with the degree of "Biomedical Sciences, Division: Dental Technology" with duration of studies (8) semesters.
- ❖ Division- Sector **"Optics and Optometry"** Upon successful attendance, students graduate with the degree of "Biomedical Sciences, Division: Optics and Optometry" with duration of studies (8) semesters.

By the end of Undergraduate course curriculum, the graduate has:

- ✓ a high level of basic proficiency at Biomedical Sciences, and skills that are useful in the diagnosis and treatment of human pathophysiological conditions.
- ✓ Special background knowledge and specialization in the subject area of the aforementioned divisions.

2. Structure of Undergraduate course curriculum

2.1 Course curriculum duration

The study duration in the Department of Biomedical Sciences is 8 (eight) semesters. The initial (3) three semesters offer general and specific background knowledge and are common in the "Aesthetics & Cosmetic science, "Radiology and Radiotherapy", "Medical Laboratories Science", "Dental Technology" and "Optics and Optometry" Divisions.

The following five (5) semesters offer specialization and specific background knowledge for each Division respectively.

According to the guidelines of the Administration Committee, the Program Study Committee proposes the following twenty (20) common courses of the three semesters.

A. The Course Curriculum of the three (3) common semesters is comprised of General and Specific Background courses from which the student can acquire general and specialized knowledge on the subject area of Biomedical Sciences worth of ninety (90) credit units.

- **Seventeen (17) Compulsory General Background Courses,** which cover fundamental concepts and skills based on Biomedical Sciences. Students receive training in the subject areas of Anatomy I and II, Physiology, Cell Biology, Biophysics, General and Inorganic Chemistry, Mathematics in Biomedical Sciences, Organic Chemistry, Biochemistry, General Microbiology, Pharmacology, First Aid, Biomedical English Terminology, Biostatistics, Bioinformatics, Research Methodology, Introduction to Biomedical Sciences. During the 1st Semester of 2019-2020 academic year the "Mathematics in Biomedical Sciences" course has been added. The aim of this subject is to perceive the basic concepts of Applied Mathematics and how these can be implemented both in research as well as in professions related to Health Sciences
- **Three (3) Compulsory Elective Specific Background Courses:** Each Division has chosen and defined their subject so as students become acquainted with the subject area of the division which they will be asked to select in the 4th semester.

B. The Course Curriculum of the remaining five (5) semesters is comprised of Specialization as well as Specific Background Courses (Compulsory and/or Optional) for each division, with total worth of 150 credit units.

C. Undergraduate internship takes place in the private or public sector according to the Department curriculum for undergraduate studies. In order to be optimally linked with the labor market as well as the graduates' employability growth, its duration is set to four (4) months.

3. Course Curriculum of The Three First Semesters

3.1 1st Semester

The first (1st) Semester of Studies is comprised of six (6) General Background Courses offering students thirty (30) credit units (Anatomy I, General & Inorganic Chemistry, Cell Biology, Biophysics, Bioinformatics, Mathematics in Biomedical Sciences). Students, in small teams, must attend seventeen (17) theory course hours per semester and six (6) laboratory course hours per semester.

3.2 2nd Semester

The second (2nd) Semester of Studies is comprised of seven (7) General Background Courses offering students thirty (30) credit units (Anatomy II, Biochemistry, Organic Chemistry, Introduction to Biomedical Sciences, Biomedical English Terminology, Physiology and Biostatistics). Students, in small teams, must attend twenty (20) theory course hours per semester and four (4) laboratory course hours per semester.

3.3 3rd Semester

The third (3rd) Semester of Studies is comprised of four (4) General Background Courses and three (3) Specific Background Courses, compulsory /optional for each of the five (5) divisions offering students thirty (30) credit units.

In that way, the students are introduced to the courses of the division they have to choose.

Students must attend twenty-four (24) theory course hours and four (4) laboratory course hours per semester in small teams.

Department of Biomedical Sciences common semesters (1st, 2nd and 3rd) course curriculum

Table3.1 – 1st Semester study guide

Course code	Order No	1st Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
1011-1012	**1**	ANATOMY I	3	2	5	180	7	GBC /C
1021-1022	**2**	GENERAL & INORGANIC CHEMISTRY	3	2	5	180	7	GBC /C
1031	**3**	CELL BIOLOGY	3	0	3	110	4	GBC /C
1041-1042	**4**	BIOPHYSICS	3	2	5	180	7	GBC /C
1051	**5**	BIO INFORMATICS	3	0	3	90	3	GBC /C
1061	**6**	MATHEMATICS IN BIOMEDICAL SCIENCES[1]	2	0	2	60	2	GBC /C
		TOTAL	**17**	**6**	**23**	**800**	**30**	

Table3.2 – 2nd Semester study guide

Course code	Order No	2nd Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
2011	**1**	ANATOMY II	4	0	4	160	6	GBC /C
2021	**2**	BIOCHEMISTRY	3	0	3	90	3	GBC /C
2031	**3**	ORGANIC CHEMISTRY	3	0	3	90	3	GBC /C
2041	**4**	INTRODUCTION TO BIOMEDICAL SCIENCES	2	0	2	60	2	GBC /C
2051-2052	**5**	PHYSIOLOGY	4	2	6	210	8	GBC /C
2061-2062	**6**	BIOSTATISTICS	2	2	4	160	6	GBC /C
2071	**7**	BIOMEDICAL ENGLISH TERMINOLOGY[2]	2	0	2	60	2	GBC /C
		TOTAL	**20**	**4**	**24**	**830**	**30**	

1 The 1st Semester's common course "BIOMEDICAL ENGLISH TERMINOLOGY- Course code 1061" is moved in the 2nd Semester with course code 2071 retaining the same hours/week and ECTS credits and replaced by the new course "MATHEMATICS IN BIOMEDICAL SCIENCES" with course code 1061 and same hours/week and ECTS credits.

2 In the 2nd Semester there is a reduction of hours/week and ECTS credits (from 4 to 2) for the common course: "INTRODUCTION TO BIOMEDICAL SCIENCES- Course code 2041" (Assembly 12/10.09.19).

Chart 3.3 – 3rd Semester study guide

Course code	Order No	3rd Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
3011	**1**	PHARMACOLOGY	3	0	3	90	3	GBC /C
3021	**2**	RESEARCH METHODOLOGY	4	0	4	120	4	GBC /C
3031-3032	**3**	FIRST AID	2	2	4	120	4	GBC /C
3041	**4**	GENERAL MICROBIOLOGY	4	0	4	120	4	GBC /C
3051	**5a**	PHYSIOLOGY OF THE STOMATOGNATHIC SYSTEM	3	0	3	**90**	**3**	SBC/CE
3052	**5b**	ANATOMY OF THE EYE						
3053	**5c**	NOSOLOGY*						
3061	**6a**	HISTOLOGY OF ORAL CAVITY AND DENTAL TISSUES	4	0	4	**140**	5	SBC/CE
3062	**6b**	OPTICAL MATERIALS OF OPHTHALMIC LENSES AND HISTORY OF GLASS						
3063	**6c**	BASIC PRINCIPLES OF DERMATO-COSMETIC SCIENCE						
3064	**6d**	PATHOPHYSIOLOGY						
3065	**6e**	INTRODUCTION TO RADIATIONS						
3071-3072	**7a**	INTRODUCTION TO BIOMATERIALS OF DENTAL TECHNOLOGY	4	2	6	180	7	SBC/CE
3073-3074	**7b**	GEOMETRICAL AND PHYSICAL OPTICS						
3075-3076	**7c**	BASIC PRINCIPLES OF DERMATOLOGY						
3077-3078	**7d**	PRINCIPLES OF INSTRUMENTAL ANALYSIS						
3079-3080	**7e**	INTRODUCTION TO MEDICAL IMAGING AND RADIOTHERAPY						
		TOTAL	**24**	**4**	**28**	**860**	**30**	

* Shared optional course for the Divisions of: Aesthetics & Cosmetic Science, Radiology & Radiotherapy, Medical Laboratories Science

ABBREVIATIONS

General Background Course: ***GBC*** *Specific Background Course:* ***SBC*** *Specialization Course:* ***SC*** *Compulsory Elective:* ***CE*** *Compulsory* ***(C)***

4. Study Program of the Division of Aesthetics & Cosmetic Science

4.1 General academic characteristics of the course and the study program

The fields of Dermatoaesthetics are briefly the following:

1. Skin problems such as acne, aging- photoaging, obesity, hirsutism are treated by Aestheticians according to their professional rights.
2. Non-injectable mesotherapy, photorejuvenation and advanced facial electrotherapy are new areas of Dermatoaesthetics
3. The progress of thalassotherapy and the development of spa therapy centers as well as spa tourism have significantly expanded the field of knowledge supported by our division.
4. Modern hair removal methods such as biochemical methods, electrical methods, and laser, are also a subject of Dermatoaesthetics that certify professional rights to our graduates.
5. Permanent Make Up (P.M.U.) is also a new field of Dermatoaesthetics and Dermatocosmetic science.
6. The assistance of teams consisted of health care scientists such as Doctors, Oncologists, Radiotherapists, Plastic surgeons, Nurses, Psychologists, Physiotherapists, Aestheticians and Cosmetologists for the treatment of side effects on the skin from chemotherapy and radiotherapy in oncology patients is another **new field** of knowledge of our division.
7. The evolution of Aesthetic Dermatology often brings Aestheticians face to face with people who have undergone medical aesthetic interventions to improve their appearance or treat aesthetic problems. A good knowledge of Dermatology is necessary for Aestheticians and Cosmetologists so that they can safely and effectively perform aesthetic operations to people who have undergone medical aesthetic interventions in accordance with their professional rights.

The fields of Dermatocosmetology are briefly the following:

1. Research and Development of new cosmetic products.
2. Study of the mechanisms of action of bioactive substances incorporated in cosmetics.
3. Manufacturing of cosmetic products in industrial scale.
4. Quality control (physicochemical methods, instrumental analysis methods, microbiological control, stability tests), of raw materials, final products and packaging materials.
5. Efficacy of manufactured products -Evidence of **claims of action** of cosmetic products and medical devices.
6. Recently, in accordance with the harmonization of Greek legislation with the European Regulation (EC) No 1223/2009 a documentation of the toxicological safety

of cosmetics is required. Thus, **toxicology**, specializing in Cosmetic Science, has become another important field.

7. Moreover, the incorporation of herbal ingredients in cosmetic products is a **new strong trend** of modern Cosmetology-Phytocosmetology and is one of the objects of many cosmetic industries in our country, which has a very rich flora.

8. The impact of the production and use of cosmetic products on the **environment** is an additional **new field** of Dermatocosmetology, as well as the development of bioactive substances and raw materials from renewable sources (green chemistry, biotechnology).

9. The development of **dermocosmetics – «pharmacocosmetics»** is also a **new extension** of Dermatocosmetology. Cosmetics that combine a local cosmetic property with a dermatological action are referred to as "Dermocosmetics" or "Cosmeceuticals". They act locally on the skin, auxiliary to a medication and contain active substances, which in combination with a treatment may modify the biochemical processes of the skin with the main purpose of improving or maintaining clinical signs of a condition, which can be considered as "disease-non-disease". The legal regulation of **medical devices**, produced in cosmetic plants, after approval by the National Organization for Medicines (EOF), is another **ongoing field of Dermatocosmetology.**

4.1.1 Scope of the Curriculum

The aim of the proposed curriculum is to provide complete university education on general subjects of Biomedical Sciences such as Physiology, Anatomy, Biochemistry, Biostatistics, Nosology, etc. as well as on the traditional and new fields of dermatology and dermatocosmetology with the introduction of courses on new scientific developments in the field of knowledge.

The program aims at providing students with the knowledge they need in order to understand and manage future scientific developments in the field of Dermatoaesthetics and Dermatocosmetology as well as in the wider field of Biomedical Sciences.

The infrastructure of the program lays the necessary foundations for anyone who wishes to pursue further studies and participation in research processes.

SUMMARY DOCUMENT OF THE CURRICULUM

The curriculum offers sixty nine (69) courses (including Thesis and Internships) of which the student must have successfully completed forty seven (47), in order to become a graduate. The 1st and 2nd semesters include six (6) and seven (7) Compulsory/General Background courses, respectively.

The 3rd semester includes four (4) Compulsory courses/General Background and are offered thirteen (13) Compulsory/Specific Background Selection, of which three (3) must be selected.

The curriculum of the remaining five (5) semesters includes Specialization courses and Specific Background (Compulsory and/or Optional courses for the direction of Aesthetics and Cosmetic Science.

The 4th and 5th semesters include six (6) and five (5) Compulsory courses, respectively.

The 6th semester includes three (3) Compulsory courses, and are offered four (4) Optional courses, of which two (2) must be selected.

The 7th semester includes four (4) Compulsory courses and two (2) Compulsory Elective courses, of which one (1) must be selected.

In the 8th semester fifteen (15) Compulsory Courses are offered, including Thesis and Internship. The student is given the opportunity to choose:

a) Thesis, Internship and two (2) Compulsory Elective courses or

b) Internship and four (4) Compulsory Elective courses or

c) Thesis and four (4) Compulsory Elective courses or

d) Six (6) Compulsory Elective courses.

INTERNATIONAL LEVEL STUDY PROGRAMMES:

1. Bachelor in Cosmetic Science, University of Sunderland
2. Department of Toxicology, Dermato- Cosmetology and Pharmacognosy Vrije Universiteit, Brussels (4 years BS)
3. Department of Pharmacy and Cosmetic Science, De Montfort University, England (4 years BS)
4. University of Toledo, Toledo, OH, United States, B.S. in Pharmaceutical Sciences, Cosmetic Science & Formulation Design (4 years BS)
5. Medical University of Bialystok, Faculty of Pharmacy with the Division of Laboratory Medicine, BS in Cosmetology
6. Department of Food and Cosmetic Science, Tokyo University (4 years BS)
7. Department of Cosmetic Science, University of Taiwan (4 years BS)
8. Department of Fragrance and Cosmetic Science, Kaohsiung Medical University (4 years BS)
9. Mae Fah Luang University School of Cosmetic Science Chiang Rai, Thailand (4 years BS)
10. Victoria University, Australia, BSc Dermal Sciences (4 years BS)

4.1.2 Professional rights of graduates

The professional rights of the graduate of the Direction of Aesthetics and Cosmetic Science (as summarized according to the LD. 361/69, P.D. No.83 GNS 37A / 7-2-1989 Article 1, and bulletin 1517/19-4-2017, PAO 7TOX465FYO-ETI/ Ministry of Health and Welfare) are as follows:

1. They have the exclusive right to establish, organize and autonomously operate an Aesthetic laboratory and provide safely their services that are certified by the respective presidential edict and bulletins. They can, also, perform cosmetic procedures such as laser application to remove hair growth independently and at their own risk according to the law.
2. Collaboration with dermatological or endocrinological clinics or private practices as well as with Plastic Surgeons helping to address problems related to their specialty.
3. Staff cosmetic factories, participating in research and development, production, quality control, the study of the efficacy and safety of cosmetics and medical devices as defined by the Regulation (EU 2017/745), which can be produced in cosmetic factories after approval by the National Organization for Medicines. They support legislatively with the assistance of other scientific specialties or even individual the departments "Regulatory Affairs" in Companies for the Development and Production of Cosmetic Products
4. They cover any other professional activity that occurs with the evolution of technology and is proven to be covered by the subject of their specialty.
5. They carry out studies and participate in research groups.
6. They are employed at the various levels of education, in accordance with the applicable legislation.

*The graduates of the «Department of Aesthetics and Cosmetology » of Alexander TEI of Thessaloniki have the same rights.

The profession of Aesthetics and Cosmetologist is regulated and defined as a health profession by Law 361/69 as amended by provisions 576/77 GG I 102 and Presidential Decree 83/89. The profession of Aesthetics and Cosmetologist is issued by Health Regional Directorates under the Health Ministry supervision. Those who, according to the law, obtain a license to practice aesthetics and cosmetologist, can also obtain a license to establish and operate an Aesthetics laboratory, with the installation and operation specifications provided by law.

4.2 Division course curriculum tables

ABBREVIATIONS
General Background Course: GBC
Specific Background Course: SBC
Specialization Course: SC
Compulsory Elective CE
Compulsory (C)

Table 4.1 –Weekly Timetable -4th Semester

Subject Code	s/n	4th Semester	Theoretical	Lab	Total	Total Workload	(ECTS)	Subject Category
4011	**1**	Nutrition and Skin	3	0	3	90	4	SBC
4021-4022	**2**	Spa Therapy- Thermalisation	3	2	5	174	7	SBC
4031	**3**	Dermato-Aesthetics I	3	0	3	120	4	SBC
4041	**4**	Chemistry & Cosmetic Science of Natural Products	3	0	3	120	4	SBC
4051	**5**	Dermatology I	3	0	3	90	4	SBC
4061-4062	**6**	Dermato-Cosmetic Science I	3	3	6	174	7	SC
		Total	**18**	**5**	**23**	**828**	**30**	

Table 4.2 - Weekly Timetable -5th Semester

Subject Code	s/n	5th Semester	Theoretical	Lab	Total	Total Workload	(ECTS)	Subject Category
5011-5012	**1**	Dermato-Aesthetics II	3	3	6	210	7	SC
5021-5022	**2**	Dermatology II – Venereology	3	2	5	144	5	SC
5031-5032	**3**	Dermato-Cosmetic Science II	3	3	6	210	7	SC
5041	**4**	Adverse events of cosmetic products-Toxicology	3	0	3	120	4	SBC
5051-5052	**5**	Make-up/Permanent make -up (PMU)	4	2	6	174	7	SC
		Total	**16**	**10**	**26**	**858**	**30**	

Table 4.3 - Weekly Timetable -6th Semester

Subject Code	s/n	6th Semester	Theoretical	Lab	Total	Total Workload	(ECTS)	Subject Category
6011-6012	**1**	Efficacy of Cosmetic products	3	3	6	210	7	SC
6021-6022	**2**	Electrical Dermatotherapy I	3	3	6	210	**7**	SC
6031-6032	**3**	Quality Control of Cosmetic products	3	3	6	210	7	SC
6041	**4α**	Environment and Cosmetic Products	3	0	3	120	4	SBC
6042	**4β**	Basic Principles in Aesthetic Dermatology						
6051	**5α**	Biotechnology in Cosmetic Science	3	0	3	120	5	SBC
6052	**5β**	Manufacturing of Cosmetic products						
		Total	**15**	**9**	**24**	**900**	**30**	

Table 4.4 - Weekly Timetable -7th Semester

Subject Code	s/n	7th Semester	Theoretical	Lab	Total	Total Workload	(ECTS)	Subject Category
7011-7012	**1**	Electrical Dermatotherapy II-Laser	3	3	6	210	7	SC
7021-7022	**2**	Non-invasive treatment of obesity	4	2	6	210	7	SC
7031-7032	**3**	Enzymatic Dermatotherapy	3	2	5	210	7	SC
7041	**4**	Delivery Systems of bioactive substances	3	0	3	120	5	SC
7051	**5α**	Ethics of Profession	2	0	2	90	4	SBC
7052	**5β**	Legislation of cosmetics and medical devices						
		Total	**15**	**7**	**22**	**840**	**30**	

Table 4.5 - Weekly Timetable -8th Semester

Subject Code	s/n	8th Semester	Theoretical	Lab	Total	Total Workload	(ECTS)	Subject Category
8011	**1**	Alternative Therapies	3	0	3	**90**	5	SBC
8021	**2**	Safety assessment of cosmetics	3	0	3	**90**	5	SBC
8031	**3**	Bioethics	3	0	3	**90**	5	SBC
8041	**4**	Laser Safety	3	0	3	**90**	5	SBC
8051	**5**	Aging -Longevity	3	0	3	**90**	5	SBC
8061	**6**	Hygiene and Epidemiology	3	0	3	**90**	5	SBC
8071	**7**	Dermatology and Aesthetic in Specific Population	3	0	3	**90**	5	SBC
8081	**8**	Packaging of Cosmetics	3	0	3	**90**	5	SBC
8091	**9**	Natural and Organic Cosmetics	3	0	3	**90**	5	SBC
80101-80102	**10**	Aesthetic Physical Gymnastics	2	1	3	**90**	5	SBC
80111	**11**	Aesthetic and Dermato-Cosmetic Science in oncology patients	3	0	3	**90**	5	SBC
80121-80122	**12**	Plastic Surgery and Sports Activity	2	1	3	**90**	5	SBC
80131	**13**	Skin Laser applications and Photonics	3	0	3	**90**	5	SBC
80141	**14**	Undergraduate Thesis (Dissertation)					10	SC
80151	**15**	Undergraduate Internship					10	SC
		Total					**30**	

1. Choice of Course's Type at 8th semester

	Type of Course	Nr	(ECTS)
1st Choice	Undergraduate Thesis	1	10
	Undergraduate Internship	1	10
	Choice of Courses	2	10
	Total:	**4**	**30**
2nd Choce	Undergraduate Thesis	0	0
	Undergraduate Internship	1	10
	Choice of Courses	4	20
	Total:	**5**	**30**
3rd Choice	Undergraduate Thesis	1	10
	Undergraduate Internship	0	0
	Choice of Courses	4	20
	Total:	**5**	**30**
4th Choice	Undergraduate Thesis	0	0
	Undergraduate Internship	0	0
	Choice of Courses	6	30
	Total:	**6**	**30**

DIVISION OF AESTHETICS AND COSMETIC SCIENCE
EQUIVALENTS (4th,5th, 6th,7th,8th SEMESTER)-ACADEMIC YEAR 2019-20

Previous Study Program			Current Study Program	
Code	**Subject Title**	PS	**Code**	**Subject Title**
	1th SEMESTER		NEW PROGRAM	
N2-1010	INTRODUCTION TO FACIAL AESTHETICS		4031AK (4031)	Dermato-Aesthetics I
N2-1010-E	INTRODUCTION TO FACIAL AESTHETICS – Lab			
N2-1010-Θ	INTRODUCTION TO FACIAL AESTHETICS – Theory			
N2-1020	PHYSIOLOGY		2050 (2051-2052)	Physiology
			2051 (2051)	Physiology–Theory
			2052 (2052)	Physiology–Lab
N2-1030	ANATOMY		1010 (1011-1012)	Anatomy I
			1011 (1011)	Anatomy I –Theory
			1012 (1012)	Anatomy I –Lab
			2011 (2011)	AnatomyII
N2-1040	DERMATOLOGY I		3075 (3075-3076 7c)	Basic principles of Dermatology
N2-1040-E	DERMATOLOGY I – Lab		3075-E (3076)	Basic principles of Dermatology –Lab
N2-1040-Θ	DERMATOLOGY I – Theory		3075-Θ (3075)	Basic principles of Dermatology –Theory
N2-1050	INORGANIC CHEMISTRY		1020 (1021-1022)	General and Inorganic Chemistry
N2-1050-E	INORGANIC CHEMISTRY – Lab		1022 (1022)	General and Inorganic Chemistry –Lab
N2-1050-Θ	INORGANIC CHEMISTRY – Theory		1021 (1021)	General and Inorganic Chemistry –Theory
N2-1060	SPECIAL TOPICS OF PHYSICS - LASER PRINCIPLES		1061 (1061)	Mathematics in Biomedical Sciences
			1040 (1041-1042)	Biophysics
N2-1060-	SPECIAL TOPICS OF PHYSICS - LASER PRINCIPLES– Lab		1042 (1042)	Biophysics – Lab

E				
N2-1060-Θ	SPECIAL TOPICS OF PHYSICS - LASER PRINCIPLES– Theory		1041 (1041)	Biophysics – Theory
	2th SEMESTER			
N2-2010	CLINICAL FACIAL AESTHETICS		5010AK (5011-5012)	Dermato-Aesthetics II
N2-2010-E	CLINICAL FACIAL AESTHETICS – Lab		5012AK (5012)	Dermato-AestheticsII Lab
N2-2010-Θ	CLINICAL FACIAL AESTHETICS – Theory		5011AK (5011)	Dermato-AestheticsII Theory
N2-2020	BASIC PRINCIPLES OF MAKE-UP		5050AK (5051-5052)	Make-up/Permanent make -up (PMU)
N2-2020-E	BASIC PRINCIPLES OF MAKE-UP – Lab		5052AK (5052)	Make-up/Permanent make -up (PMU)-Lab
N2-2020-Θ	BASIC PRINSIPLES OF MAKE-UP – Theory		5051AK (5051)	Make-up/Permanent make -up (PMU)-Theory
N2-2030	BASIC PRINSIPLES OF COSMETOLOGY		3063 (3063 6c)	Basic principles of Dermato-cosmetic science
N2-2030-E	BASIC PRINSIPLES OF COSMETOLOGY – Lab			
N2-2030-Θ	BASIC PRINSIPLES OF COSMETOLOGY – Theory			
N2-2040	DERMATOLOGY II		4051AK (4051)	Dermatology I
N2-2040-E	DERMATOLOGYII – Lab			
N2-2040-Θ	DERMATOLOGY II – Theory			
N2-2050	ORGANIC CHEMISTRY		2031 (2031)	Organic Chemistry
	3th SEMESTER			
N2-3010	NOSOLOGY – PATHOLOGY OF ENDOCRINE GLANDS		3053 (3053 5c)	Nosology
N2-3020	STAGE MAKE-UP TECHNIQUES		5050AK (5051-5052)	Make-up/Permanent make -up (PMU)
N2-3020-E	STAGE MAKE-UP TECHNIQUES – Lab		5052AK (5052)	Make-up/Permanent make -up (PMU)-Lab
N2-3020-Θ	STAGE MAKE-UP TECHNIQUES – Theory		5051AK (5051)	Make-up/Permanent make -up (PMU)-Theory
N2-3030	APPLIED COSMETOLOGY I		4060AK (4061-4062)	Dermato-cosmetic Science I

N2-3030-E	APPLIED COSMETOLOGY I – Lab		4062AK (4062)	Dermato-cosmetic Science I - Lab
N2-3030-Θ	APPLIED COSMETOLOGY I – Theory		4061AK (4061)	Dermato-cosmetic Science I- Theory
N2-3040	DERMATOLOGY III		5020AK (5021-5022)	Dermatology II - Venereology
			5022AK (5022)	Dermatology II - Venereology -Lab
			5021AK (5021)	Dermatology II - Venereology - Theory
N2-3050	CHEMISTRY & COSMETIC SCIENCE OF NATURAL PRODUCTS		4041AK (4041)	Chemistry & Cosmetic Science of Natural Products
N2-3060	AESTHETIC NUTRITION AND DIET		4011AK (4011)	Nutrition and Skin
	4th SEMESTER			
N2-4010	BODY AESTHETIC		4020AK (4021-4022)	Spa Therapy - Thermalisation
N2-4010-E	BODY AESTHETIC–Lab		4022AK (4022)	Spa Therapy – Thermalisation - Lab
N2-4010-Θ	BODY AESTHETIC – Theory		4021AK (4021)	Spa Therapy – Thermalisation - Theory
N2-4020	AESTETIC PHYSICAL ACTIVITY		80100AK (80101-80102)	Aesthetic Physical Gymnastics
N2-4020-E	AESTETIC PHYSICAL ACTIVITY– Lab		80102AK (80102)	Aesthetic Physical Gymnas - Lab
N2-4020-Θ	AESTETIC PHYSICAL ACTIVITY– Theory		80101AK (80101)	Aesthetic Physical Gymnastics - Theory
N2-4030	APPLIED COSMETOLOGY II		5030AK (5031-5032)	Dermato-Cosmetic Science II
N2-4030-E	APPLIED COSMETOLOGY II – Lab		5032AK (5032)	Dermato-Cosmetic Science II - Lab
N2-4030-Θ	APPLIED COSMETOLOGY II – Theory		5031AK (5031)	Dermato-Cosmetic Science II - Theory
N2-4040	MAKE-UP/PERMANENT MAKE UP (PMU)		5050AK (5051-5052)	Make-up/Permanent make -up (PMU)
N2-4040-E	MAKE-UP/PERMANENT MAKE UP (PMU) Lab		5052AK (5052)	Make-up/Permanent make -up (PMU)-Lab
N2-4040-Θ	MAKE-UP/PERMANENT MAKE UP (PMU) Theory		5051AK (5051)	Make-up/Permanent make -up (PMU)-Theory
N2-4A50	LEGISLATION OF COSMETICS		7052AK (7052 5b)	Legislation of cosmetics and medical devices

N2-4B50	BUSINESS MANAGEMENT		7052AK (7052 5b)	Legislation of cosmetics and medical devices
	5th SEMESTER			
N2-5010	AESTHETIC INTERVENTION -OBESITY– CELLULITE		7020AK (7021-7022)	Non-invasive treatment of obesity
N2-5010-E	AESTHETIC INTERVENTION -- OBESITY– CELLULITE – Lab		7022AK (7022)	Non-invasive treatment of obesity - Lab
N2-5010-Θ	AESTHETIC INTERVENTION -- OBESITY– CELLULITE – Theory		7021AK (7021)	Non-invasive treatment of obesity - Theory
N2-5020	METHODS FOR TEMPORARY HAIR REMOVAL		7010AK (7011-7012)	Electrical Dermatotherapy II-Laser
N2-5020-E	METHODS FOR TEMPORARY HAIR REMOVAL – Lab		7012AK (7012)	Electrical Dermatotherapy II-Laser -E
N2-5020-Θ	METHODS FOR TEMPORARY HAIR REMOVAL Theory		7011AK (7011)	Electrical Dermatotherapy II-Laser -Theory
N2-5030	EFFICACY OF COSMETIC PRODUCTS		6010AK (6011-6012)	Efficacy of Cosmetic products
N2-5030-E	EFFICACY OF COSMETIC PRODUCTS – Lab		6012AK (6012)	Efficacy of Cosmetic products - Lab
N2-5030-Θ	EFFICACY OF COSMETIC PRODUCTS – Theory		6011AK (6011)	Efficacy of Cosmetic products - Theory
N2-5040	NANOCOSMETOOGY		7041AK (7041)	Delivery Systems of bioactive substances
N2-5050	SIDE EFFECTS OF COSMETICS		5041AK (5041)	Adverse events of cosmetic products-Toxicology
N2-5A60	PHARMACOLOGY		3011 (3011)	Pharmacology
N2-5B60	BIOCHEMISTRY		2021 (2021)	Biochemistry
	6th SEMESTER			
N2-6010	RESEARCH METHODOLOGY		3021 (3021)	Researche Methodology
			1061 (1061)	Mathematics in Biomedical Sciences
N2-6020	FOREIGN LANGUAGE TERMINOLOGY		2071 (2071)	Biomedical English Terminology
N2-6030	QUALITY CONTROL OF COSMETIC PRODUCTS		6030AK (6031-6032)	Quality Control of Cosmetic products
N2-6030-E	QUALITY CONTROL OF COSMETIC PRODUCTS – Lab		6032AK (6032)	Quality Control of Cosmetic products - Lab
N2-6030-Θ	QUALITY CONTROL OF COSMETIC PRODUCTS – Theory		6031AK (6031)	Quality Control of Cosmetic products -Theory
N2-6040	BODY AESTHETIC AROMATOTHERAPY		8011AK (8011)	Alternatives Therapies

N2-6040-E	BODY AESTHETIC AROMATOTHERAPY– Lab			
N2-6040-Θ	BODY AESTHETIC AROMATOTHERAPY– Theory			
N2-6050	METHODS FOR PERMANENT HAIR REMOVAL – LASER		7010AK (7011-7012)	Electrical Dermatotherapy II-Laser
N2-6050-E	METHODS FOR PERMANENT HAIR REMOVAL – LASER Lab		7012AK (7012)	Electrical Dermatotherapy II-Laser - Lab
N2-6050-Θ	METHODS FOR PERMANENT HAIR REMOVAL – LASER - Theory		7011AK (7011)	Electrical Dermatotherapy II-Laser - Theory
N2-6A60	ENVIRONMENTAL EFFECTS ON AESTHETICS		6041AK (6041 4a)	Environment and Cosmetic Products
N2-6B60	MANUFACTURING OF COSMETIC PRODUCTS		6052AK (6052 5b)	Manufacturing of Cosmetic products
	7th SEMESTER			
N2-7010	BIOCHEMICAL METHODS FOR HAIR REMOVAL		7030AK (7031-7032)	Enzymatic Dermatotherapy
N2-7010-E	BIOCHEMICAL METHODS FOR HAIR REMOVAL – Lab		7032AK (7032)	Enzymatic Dermatotherapy - Lab
N2-7010-Θ	BIOCHEMICAL METHODS FOR HAIR REMOVAL – Theory		7031AK (7031)	Enzymatic Dermatotherapy - Theory
N2-7020	PLASTIC SURGERY		80120AK (80121-80122)	Plastic Surgery and Sports Activity
			80122AK (80122)	Plastic Surgery and Sports Activity -Lab
			80121AK (80121)	Plastic Surgery and Sports Activity -Theory
N2-7030	AESTHETIC ELECTROTHERAPY OF FACE AND BODY - LASER		6020AK (6021-6022)	Electrical Dermatotherapy I
N2-7030-E	AESTHETIC ELECTROTHERAPY OF FACE AND BODY - LASER – Lab		6022AK (6022)	-Electrical Dermatotherapy I-Lab
N2-7030-Θ	AESTHETIC ELECTROTHERAPY OF FACE AND BODY – LASER–Theory		6021AK (6021)	Electrical Dermatotherapy I -Theory
N2-7040	ETHICS AND BIOETHICS OF PROFESSION		7051AK (7051 5a)	Ethics of Profession
			2041 (2041)	Introduction to Biomedical sciences
NA-7050	FIRST AID		3030 (3031-3032)	First Aid
N2-7050-E	FIRST AID – Lab		3032 (3032)	First Aid – lab
N2-7050-Θ	FIRST AID – Theory		3031 (3031)	First Aid – Theory

N2-7A60	HYGIENE		8061AK (8061)	Hygiene and Epidemiology
			3041 (3041)	General Microbiology
N2-7B60	PRINCIPLES OF MARKETING		8061AK (8061)	Hygiene and Epidemiology
	8th SEMESTER			
INTER.	UNDERGRADUATE INTERNSHIP		80151AK (80151)	Undergraduate Internship
THES.	UNDERGRADUATE THESIS		80141AK (80141)	Undergraduate Thesis
			NEW SUBJECTS (UNIVERSITY OF WEST ATTICA) – NOT EQUIVALENTS	
SUBJECT OPTIONS OF H (7th) SEMESTER (NEW PROGRAM OF STUDIES)			1031 (1031)	CELLULAR BIOLOGY
	TYPE OF SUBJECT	No	1051 (1051)	INFORMATICS OF BIOMEDICAL SCIENCES
1stChoice or	Undergraduate Thesis	1	2060 (2061-2062)	BIOSTATISTICS
	Undergraduate Internship	1	2061 (2061)	BIOSTATISTICS – Theory
	Optional Subjects	2	2062 (2062)	BIOSTATISTICS–Lab
2nd Choice	Undergraduate Thesis	0	6042AK (6042 4b)	BASIC PRINCIPLES IN AESTHETIC DERMATOLOGY *
	Undergraduate Internship	1	6051AK (6051 5a)	BIOTECHNOLOGY IN COSMETIC SCIENCE *
	OptionalSubjects	4	8021AK (8021)	SAFETY ASSESSMENT OF COSMETICS*
3rd Choice	Undergraduate Thesis	1	8031AK (8031)	BIOETHICS *
	Undergraduate Internship	0	8041AK (8041)	LASER SAFETY *
	Optional Subjects	4	8051AK (8051)	AGING-LONGEVITY *
4th Choice	Undergraduate Thesis	0	8071AK (8071)	DERMATOLOGY AND AESTHETIC IN SPECIFIC POPULATION*
	Undergraduate Internship	0	8081AK (8081)	PACKAGING OF COSMETICS *
	Optional Subjects	6	8091AK (8091)	NATURAL AND ORGANIC COSMETICS *
			80111AK (80111)	AESTHETIC AND DERMATO-COSMETIC SCIENCE IN ONCOLOGY PATIENTS *
* = Specialization Subjects Optional Compulsory			80131AK (80131)	SKIN LASER APPLICATIONS AND PHOTONICS *

CLARIFICATIONS:THE CODES OF THE NEW SUBJECTS ARE IN RED COLOR AS THEY ARE IN THE COMPUTERIZED(e-study) SYSTEM

THE CODES WITH **BLACK COLOR**& IN BROTHERHOOD ARE THE NEW SUBJECTS AS PRESENTED IN THE PUBLISHED UNDERGROUND SCHEDULE ON THE WEBSITE OF DEPARTMENT

https://bisc.uniwa.gr/courses/undergradute/

SUBJECTS FROM THE LIST «NEW SUBJECTS (UNIVERSITY OF WEST ATTICA) – NOT EQUIVALENTS »: 1031, 1051 & 2060 (2061, 2062) ARE COMPULSORY FOR ALL STUDENTS.

REST SUBJECTS: 6042AK, 6051AK, 8021AK, 8031AK, 8041AK, 8051AK, 8071AK,8081AK, 8091AK, 80111AK& 80131AK ARE ALL OPTIONAL COMPULSORY

5. Study Program of the Division of Radiology and Radiotherapy

5.1 Study program- General characteristics and descriptive elements

The academic character of the study program

5.1.1 The cognitive subject of the study program

The study program of the Division of Radiology and Radiotherapy covers the specialized field of scientific knowledge that applies to the practice of Radiologic Technology in the departments of Medical Imaging, Nuclear Medicine and Radiotherapy. The study program ensures adequacy in the knowledge of the radiation protection regulations and their application laid down by the Greek Atomic Energy Commission and in harmony with the European and International regulations for Radiation Protection as the profession of the Medical Radiological Technologist (Radiographer) heavily depends on the use of ionizing radiations.
University courses on this subject exist in European as well as in US, Canadian and Australian universities and the graduate of this course is called Medical Radiologic Technologist or Radiographer.

5.1.2 The aim of the study program

The study program of the Division of Radiology and Radiotherapy aims to offer a combination of academic knowledge and clinical experience in order for the graduate to be able to work in the public or the private sector and specifically in:

- Departments of Medical Imaging
- Departments of Nuclear Medicine
- Department of Radiotherapy
- other areas that relate to their specialization

The study program aims for the graduate to achieve the competence of knowledge of the science of medical radiologic technology that is necessary for the safe completion of patient examinations that take place in the above departments and participation in all activities including patient management, protocol design, quality control and quality assurance of the provided services.
At the same time the study program will put down the essentials and motivate students for further scientific and professional development.
The study program aims to ascertain competency in the safe application of the radiation protection rules based on the regulations of the Greek Atomic Energy Commission and to the level which is necessary for the certification in the profession of Medical Radiologic Technology.
Additionally, the study program aims for the graduate to achieve understanding and the development of administrative and managing skills as well as the ability to apply knowledge and skills that have been obtained after the completion of 240 ECTS.

5.1.3 Study program structure – Division of Radiology and Radiotherapy

The duration of studies in the Biomedical Sciences department is eight (8) semesters.

The **first three (3) semesters** offer both General and Specific Background knowledge and they are in common with the Divisions of "Medical Laboratories Science", "Radiology and Radiotherapy", "Aesthetics and Cosmetic Science", "Dental Technology" and "Optics and Optometry".
The **next five (5) semesters** offer Specialization knowledge and Specific Background knowledge for every Division respectively.
The study program comprises theoretical teaching, laboratory exercises, hospital placements, writing assignments, medical case studies, all of them aiming to achieve sound knowledge, clinical experience and develop skills in presenting and analyzing in depth issues and subjects relating to the course content.
In the 6th and the 8th semesters the student of the Division of Radiology and Radiotherapy selects a number of the offered Compulsory Elective (CE) courses in order to complete the 240 ECTS that are necessary for graduation. This combination of courses is offered as four different choices.
Two (2) out of the 12 (twelve) in total Compulsory Elective (CE) courses are the "Clinical Practice Placement" (Undergraduate Internship) and the "Undergraduate Thesis" which offer the student six (6) ECTS each (equal to the ECTS achieved by taking up two (2) of the other Compulsory Elective (CE). The remaining Compulsory Elective (CE) courses are Specific Background Courses (SBC) and Specialization Courses (SC) which offer the student three ECTS each.

5.1.4 "Clinical Practice Placement" (Undergraduate Internship)

The Undergraduate Internship aims to offer the student of the Division of Radiology and Radiotherapy the opportunity to:

i. Realize and appreciate under realistic circumstances the role they are called to fulfill as professionals in the field of Health and specifically in the field of Radiologic Technology.
ii. Acquire the academic knowledge and clinical skills that are necessary for the proper operation of the Departments of Medical Imaging, Nuclear Medicine and Radiotherapy.
iii. Participate if they wish in research projects during Undergraduate Internship.

The Undergraduate Internship takes place in:

- Departments of Medical Imaging
- Departments of Nuclear Medicine
- Departments of Radiotherapy

The Undergraduate Internship mostly takes places in referral Hospitals of the public and private sector of Attica and hospitals of the province that fulfill the relevant requirements. Some private medical diagnostic centers (non-hospital based), fulfill also the requirements set by the Department for The Undergraduate Internship.
The students may choose for the Undergraduate Internship a placement through the Erasmus program in other European countries.
The Undergraduate Internship is supervised by the academic staff of the department and is organized by the committee of The Undergraduate Internship.
The subject "Undergraduate Internship" is placed in the sixth semester of the study program with a **duration of four months in total**. It is assessed after the end of the eighth semester whenever the student completes the training period.

Up to 50% of the Undergraduate Internship may be performed during the summer of the third year of the studies provided that the student has completed successfully the courses required. The remaining 50% may be performed during the summer of the fourth year.

The whole period of the Undergraduate Internship may be split during the teaching weeks of the seventh and eighth semesters.

During the summer of the fourth year a student may perform 50% or the whole of the Undergraduate Internship.

Students may begin the Undergraduate Internship after they have completed successfully all the main courses of the study program including those of the sixth semester.

In case the number of available places for The Undergraduate Internship is not adequate then students are assessed and listed according to the selection criteria below:

- 70% the number of courses that have been completed.
- 30% the mean grade of the courses that have been successfully completed.

The Undergraduate Internship is assessed by all contributors. Specifically, the final grade is calculated from quota as described below:

- 40% from the assessment of the supervisor of The Undergraduate Internship where it takes place.
- 40% from the assessment of the academic supervisor.
- 20% from the assessment of the Undergraduate Internship committee.

The Undergraduate Internship committee defines the evaluation criteria and the way of grading the “Undergraduate Internship” by the academic and practical placement supervisor.

5.1.5 Undergraduate Thesis (Dissertation)

Writing up an Undergraduate Thesis constitutes a hugely important intellectual task for the student of the Division of Radiology and Radiotherapy. The student acquires experience in collecting and managing data from various print and electronic sources of information, in writing scientific projects and, finally, becomes more informed and up-to-date on the specific topic of the study.

The students select the topic of interest across a list of topics that have been offered by the teaching staff. The student is in close collaboration with the Division’s teaching staff member that has taken on the supervision of the n until its completion, the presentation of the Undergraduate Thesis and its assessment. The committee for the assessment believes that the writing-up of an undergraduate Thesis adds an extra academic asset for the graduate of the Division.

The process of making an undergraduate Thesis involves the use of knowledge offered from the subject “Research Methodology”. Advice is given to students to take on the subject “Undergraduate Thesis” particularly if they wish to follow postgraduate studies and get involved in research.

The evaluation criteria for the Undergraduate Thesis are listed below:

1. Correctness and validity of the Undergraduate Thesis content (60%)
2. Sufficiency of literature referencing (20%)

3. Presentation (10%)
4. Innovation and research prospects (5%)
5. Correct use of scientific and Greek language (5%).

5.1.6 Certification of the Medical Radiologic Technologist's Profession

The Medical Radiologic Technologist's profession can be practiced after a special permit has been granted by the Ministry of Health, Welfare and Social Insurance according to the procedures that are defined in Presidential Decree 164/1996 (Government Gazette No: 118/A/14-6-1996).
The certified Medical Radiologic Technologists based on the specialized scientific and technological knowledge can be employed by health care providers in services relevant to their specialization either in the public or in the private sector.
They perform all imaging, nuclear medicine and radiotherapy examinations as prescribed by the responsible Radiologists, Nuclear Medicine doctors or Radiotherapeutic Oncologists and assess the quality of the result.
To be more specific the Medical Radiologic Technologist has duties as listed below:

Medical Imaging Dept:

- They are responsible for performing projectional imaging and image processing of the highest quality. They ensure the radiography rooms; the dark rooms and the other areas of the Departments of Medical Imaging are in good working order.
- During fluoroscopy or other imaging examinations they assist the radiologist.
- They adhere strictly to the regulations of radiation protection and make the best use of them in the Departments of Medical Imaging.
- They participate in committees for the procurement of radiologic equipment.
- They take care of the department consumables and supplies in collaboration with the radiologists.
- They are responsible for performing the quality control checks that are necessary at all stages of image production in order to detect early on any faults that may compromise the quality of the imaging result.
- They are responsible for recording correctly all the information that relates to the examination performed.
- They participate in research taking place in the department.

Nuclear Medicine Dept:

- They record the radionuclides' activity and ensure that they are kept safe in the appropriate shielded devices during transport and while in the department. They also participate in processes putting away radionuclide residues according to the radiation protection rules.
- They are responsible for preparing the diagnostic and therapeutic radionuclide agents, they measure the radioactivity in collaboration with the medical physicist of the hospital.
- They follow the radiation protection rules governing the activities of a nuclear medicine department. In case of radionuclide leakage accident, they follow the relevant rules and they inform the radiation protection supervisors.
- They make measurements, record and inform the responsible doctor.
- They are responsible for carrying out the in-vivo measurements by ensuring the best quality of the data acquisition process and by exploiting the technology available.

- They supervise the patient data input ensuring that all the necessary information is recorded.
- They check and supervise the areas where therapeutic doses of radionuclides are administered and they carry out radiation protection checks, under the supervision of the medical physicist in charge.
- They co-operate with the medical physicists and the doctors for ordering consumables and supplies required for the smooth departmental operation.
- They participate in the departmental research projects.

Radiotherapy Dept:

- They are responsible for carrying out the simulation and the CT simulator. The simulation process involves the choice of the immobilization device, informing the patient about the simulation and acquiring the imaging data required for the therapy plan. They are also responsible for carrying out the therapy plan as created by the radiotherapist and the medical physicist.
- They co-operate in the generation of the radioprotective shielding blocks, as determined in the therapy plan.
- They are in charge of carrying out part of the QA protocols involved in radiotherapeutic imaging (linacs, simulators, CT simulators) and delivery of therapy plans.
- They are responsible for delivering the therapeutic plan, for each individual patient, as the latter was determined by the radiotherapist and the medical physicist.
- They monitor the therapy and imaging systems of the department (linacs, CT simulators) and inform the systems' log books for any incidence.
- They supervise the correct input of patient data related to the daily radiotherapy treatments.
- They participate in the departmental research projects.
- They follow the radiation protection rules governing the radiotherapy department activities and ensure that those rules are correctly applied in all departmental activities.
- They carry out in-vitro irradiation procedures following the rules governing those procedures.

The graduates of the Division of Radiology and Radiotherapy are employed in clinical environments. Their progress in the departmental hierarchy depends on the governing laws and may reach the rank of Superintendent.

5.2 Division course curriculum tables

Division of Radiology and Radiotherapy Course Curriculum Tables (Semesters 4th, 5th, 6th, 7th and 8th)

Table 5.1 –Weekly Timetable -4th Semester

Course code	Order No	4st Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
5221	**1**	SECTIONAL ANATOMY	2	0	2	120	4	SC/C
5231-5232	**2**	RADIOLOGY II	5	8	13	360	12	SC/C
5241	**3**	INTRODUCTION TO COMPUTED TOMOGRAPHY – DIGITAL IMAGING	4	0	4	180	6	SC/C
5251-5252	**4**	RADIOTHERAPHY MEDICAL PHYSICS	5	2	7	240	8	SBC/C
		TOTAL	**16**	**10**	**26**	**900**	**30**	

Table 5.2 –Weekly Timetable -5th Semester

Course code	Order No	5st Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
5221	**1**	SECTIONAL ANATOMY	2	0	2	120	4	SC/C
5231-5232	**2**	RADIOLOGY II	5	8	13	360	12	SC/C
5241	**3**	INTRODUCTION TO COMPUTED TOMOGRAPHY – DIGITAL IMAGING	4	0	4	180	6	SC/C
5251-5252	**4**	RADIOTHERAPHY MEDICAL PHYSICS	5	2	7	240	8	SBC/C
		TOTAL	**16**	**10**	**26**	**900**	**30**	

Table 5.3 –Weekly Timetable -6th Semester

Course code	Order No	6st Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
6211-6212	**1**	RADIOBIOLOGY- RADIATION ONCOLOGY I	4	2	6	180	6	SC/C
6221-6222	**2**	COMPUTED TOMOGRAPHY	3	6	9	240	8	SC/C
6231	**3**	INTRODUCTION TO MAGNETIC RESONANCE IMAGING – MEDICAL IMAGE ANALYSIS	2	0	2	90	3	SC/C
6241-6242	**4**	RADIOLOGY III	2	3	5	120	4	SC/C
6251	**5**	PHYSICS OF NUCLEAR MEDICINE	2	0	2	90	3	SC/C
6261*	**6a**	CLINICAL PRACTICE PLACEMENT (UNDERGRADUATE INTERNSHIP)					6	
6271*	**6b**	SPECIALIZED APPLICATIONS OF RADIOLOGY	3	0	3	90	3	SC/CE
6281*	**6c**	BREAST IMAGING	3	0	3	90	3	SC/CE
6291*	**6d**	PATTERN RECOGNITION IN MEDICAL IMAGE- APPILICATIONS IN RADIOLOGY	3	0	3	90	3	SC/CE
6292*	**6e**	HUMAN GENETICS	3	0	3	90	3	SBC/CE
6293*	**6f**	MOLECULAR BIOLOGY	3	0	3	90	3	SBC/CE
		TOTAL	**19**	**11**	**30**	**900**	**30**	

Table 5.4 –Weekly Timetable -7th Semester

Course code	Order No	7st Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
7211-7212	**1**	MAGNETIC RESONANCE IMAGING	3	3	6	180	6	SC/C
7221-7222	**2**	RADIATION ONCOLOGY II – MODERN APPLICATIONS OF RADIOTHERAPY	3	4	7	210	7	SC/C
7231-7232	**3**	NUCLEAR MEDICINE I	4	6	10	270	9	SC/C
7241-7242	**4**	RADIATION PROTECTION	3	2	5	150	5	SC/C
7251	**5**	SPECIALIZED APPLICATIONS OF COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING – HYBRID IMAGING TECHNIQUES	2	0	2	90	3	SC/C
		TOTAL	**15**	**15**	**30**	**900**	**30**	

Table 5.5 –Weekly Timetable -8th Semester

Course code	Order No	8st Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
8211-8212	**1**	NUCLEAR MEDICINE II	4	6	10	240	8	SC/C
8221	**2**	NUCLEAR MEDICINE THERAPIES	2	0	2	90	3	SC/C
8231	**3**	RADIOLOGIC PATHOLOGY	3	0	3	120	4	SC/C
8241-8242	**4**	RADIATION ONCOLOGY III – COMBINATION THERAPIES IN ONCOLOGY	4	6	10	270	9	SC/C
8251*	**5a**	**UNDERGRADUATE THESIS**					6	
8261*	**5b**	HYBRID IMAGING	3	0	3	90	3	SC/CE

8271*	**5c**	MUSCULOSKELETAL AND CARDIOVASCULAR SYSTEM IMAGING	3	0	3	90	3	SC/CE
8281*	**5d**	SPECIALIZED MEDICAL APPLICATIONS	3	0	3	90	3	SBC/CE
8282*	**5e**	NUTRITION AND HEALTH	3	0	3	90	3	SBC/CE
8283*	**5f**	AGING AND LONGEVITY	3	0	3	90	3	SBC/CE
		TOTAL	**19**	**12**	**31**	**900**	**30**	

ABBREVIATIONS

General Background Course: GBC
Specific BackgroundCourse: SBC
Specialization Course: SC
Compulsory Elective: CE
Compulsory (C)

5.3 Elective Compulsory course Options in the 6th and the 8th Semester

A. In order to complete the required 30 ECTS for the 6th semester the following choices are offered:

1. Two (2) Optional Compulsory courses (6b – 6f)
2. Clinical Practice Placement (Undergraduate Internship)

B. In order to complete the required 30 ECTS fo the 8th semester the following choices are offered:

1. Two (2) Specific Background Courses(8b – 8f)
2. Undergraduate Thesis

	Subject	**Subject Total No**	**ECTS**
1st OPTION	Undergraduate Thesis	1	6
	Clinical Practice Placement	1	6
	Compulsory Elective Subject	0	0
	Total	2	12
2nd OPTION	Undergraduate Thesis	0	0
	Clinical Practice Placement	1	6
	Compulsory Elective Subject	2	6

	Total	3	12
3rd OPTION	Undergraduate Thesis	1	6
	Clinical Practice Placement	0	0
	Compulsory Elective Subject	2	6
	Total	3	12
4th OPTION	Undergraduate Thesis	0	0
	Clinical Practice Placement	0	0
	Compulsory Elective Subject	4	12
	Total	4	12

DIVISION OF RADIOLOGY AND RADIOTHERAPY

EQUIVALENTS (4th,5th, 6th,7th,8th SEMESTER)-ACADEMIC YEAR 2019-20

EQUIVALENT SUBJECTS – SEMESTERS 4th, 5th, 6th, 7th, 8th ACADEMIC YEAR 2019 -2020

Previous Study Program (TEI)			Current Study Program (UNIWA)	
Code	**Subject Title**	**PS**	**Code**	**Subject Title**
	1st Semester		**NEW SP (WEBSITE NEW SP)**	
N3-1010	ANATOMY I		**1010 (1011-1012)**	ANATOMY I
N3-1010-E	ANATOMY I – L		**1012 (1012)**	ANATOMY I - L
N3-1010-Θ	ANATOMY I – T		**1011 (1011)**	ANATOMY I - T
N3-1020	BIOSTATISTICS		**2060 (2061-2062)**	BIOSTATISTICS
			2061 (2061)	BIOSTATISTICS - L
			2062 (2062)	BIOSTATISTICS - T
			1061	MATHEMATICS FOR BIOMEDICAL SCIENCES
N3-1030	HYGIENE AND EPIDEMIOLOGY		**4241AA (4241AA)**	HEALTH AND EPIDEMIOLOGY- PUBLIC HEALTH
N3-1040	PHYSIOLOGY		**2050 (2051-2052)**	PHYSIOLOGY
			2051 (2051)	PHYSIOLOGY - T
			2052 (2052)	PHYSIOLOGY - L
			2021 (2021)	BIOCHEMISTRY
N3-1050	PRINCIPLES OF PHYSICS		**2031 (2031)**	ORGANIC CHEMISTRY
N3-1060	RADIOLOGIC TECHNOLOGY - I		**3079 (3079 - 3080 7ε)**	INTRODUCTION TO MEDICAL IMAGING AND RADIOTHERAPY
N3-1060-E	RADIOLOGIC TECHNOLOGY I - L		**3079-E (3080)**	INTRODUCTION TO MEDICAL IMAGING AND RADIOTHERAPY - L
N3-1060-Θ	RADIOLOGIC TECHNOLOGY I - T		**3079-Θ (3079)**	INTRODUCTION TO MEDICAL IMAGING AND RADIOTHERAPY - T

	2nd Semester			
N3-2010	ANATOMY II		**2011 (2011)**	ANATOMY II
N3-2020	FIRST AID		**3030 (3031 - 3032)**	FIRST AID
N3-2020-Ε	FIRST AID – L		**3032 (3032)**	FIRST AID - L
N3-2020-Θ	FIRST AID – T		**3031 (3031)**	FIRST AID - T
N3-2030	ELEMENTS OF PSYCHOLOGY AND COMMUNICATION		**2041 (2041)**	INTRODUCTION TO BIOMEDICAL SCIENCES
N3-2040	PATIENT MANAGEMENT IN MEDICAL IMAGING		**4210AA (4211-4212)**	PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS AND PATIENT MANAGEMENT IN THE DEPARTMENT OF MEDICAL IMAGING
			4211AA (4211)	PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS AND PATIENT MANAGEMENT IN THE DEPARTMENT OF MEDICAL IMAGING - T
			4212AA (4212)	PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS AND PATIENT MANAGEMENT IN THE DEPARTMENT OF MEDICAL IMAGING - L
N3-2050	RADIOLOGIC TECHNOLOGY II		**4220AA (4221-4222)**	RADIOLOGY I
N3-2050-Ε	RADIOLOGIC TECHNOLOGY II - L		**4222AA (4222)**	RADIOLOGY I - L
N3-2050-Θ	RADIOLOGIC TECHNOLOGY II - T		**4221AA (4221)**	RADIOLOGY I - T
N3-2060	RADIATION PHYSICS I		**4231AA (4231)**	PHYSICS OF MEDICAL IMAGING

	3rd Semester			
N3-3010	HEALTH INFORMATION TECHNOLOGY		**1051 (1051)**	BIO INFORMATICS
N3-3010-Ε	HEALTH INFORMATION TECHNOLOGY – L			
N3-3010-Θ	HEALTH INFORMATION TECHNOLOGY – T		**1061**	MATHEMATICS FOR BIOMEDICAL SCIENCES
N3-3020	DIGITAL IMAGING		**5241AA (5241)**	INTRODUCTION TO COMPUTED TOMOGRAPHY – DIGITAL IMAGING
N3-3030	BASIC PRINCIPLES OF MEDICINE		**3053 (3053 5γ)**	GENERAL MEDICINE
			3041 (3041)	GENERAL MICROBIOLOGY
N3-3040	MEDICAL IMAGING I		**5230AA (5231-5232)**	RADIOLOGY II
N3-3040-Ε	MEDICAL IMAGING I – L		**5232AA (5232)**	RADIOLOGY II -L
N3-3040-Θ	MEDICAL IMAGING I – T		**5231AA (5231)**	RADIOLOGY II -T
N3-3050	PRINCIPLES of ADMINISTRATION and MANAGEMENT of HEALTH UNITS		**1020 (1021-1022)**	GENERAL AND INORGANIC CHEMISTRY
			1021(1021)	GENERAL AND INORGANIC CHEMISTRY - T
			1022 (1022)	GENERAL AND INORGANIC CHEMISTRY - L

	4th Semester			
N3-4010	RADIATION BIOLOGY		**3065 (3065-6ε)**	INTRODUCTION TO RADIATIONS
N3-4020	RADIATION PHYSICS II		**5250 (5251-5252)**	PHYSICS OF RADIOTHERAPEUTIC ONCOLOGY
N3-4020-Ε	RADIATION PHYSICS II – L		**5252AA (5252)**	PHYSICS OF RADIOTHERAPEUTIC ONCOLOGY- L
N3-4020-Θ	RADIATION PHYSICS II – T		**5251 (5251)**	PHYSICS OF RADIOTHERAPEUTIC ONCOLOGY- T
N3-4030	SECTIONAL ANATOMY		**5221AA (5221)**	SECTIONAL ANATOMY
N3-4040	MEDICAL IMAGING II		**6240AA (6241-6242)**	RADIOLOGY III
N3-4040-Ε	MEDICAL IMAGING II – L		**6242AA (6242)**	RADIOLOGY III -L
N3-4040-Θ	MEDICAL IMAGING II – T		**6241AA (6241)**	RADIOLOGY III -T
N3-4A50	MEDICAL IMAGE PROCESSING		**6291AA (6291 6δ)**	PATTERN RECOGNITION IN MEDICAL IMAGES- APPLICATIONS IN RADIOLOGY
N3-4B50	SPECIALIZED TOPICS IN HEALTH INFORMATION TECHNOLOGY		**6292AA (6292 6ε)**	HUMAN GENETICS
N3-4Γ50	CHEMISTRY		**6293AA (6293 6στ)**	MOLECULAR BIOLOGY
			1020 (1021-1022)	GENERAL AND INORGANIC CHEMISTRY
			1021(1021)	GENERAL AND INORGANIC CHEMISTRY- T
			1022 (1022)	GENERAL AND INORGANIC CHEMISTRY- L
N3-4060	PROFESSIONAL DEONTOLOGY & BIOETHICS		**4251AA (4251)**	BIOETHICS AND PROFESSIONAL DEONTOLOGY

	5th Semester			
N3-5010	RADIOTHERAPEUTIC ONCOLOGY I		**6210AA (6211-6212)**	RADIOBIOLOGY – RADIATION ONCOLOGY I
N3-5010-E	RADIOTHERAPEUTIC ONCOLOGY I - L		**6212AA (6212)**	RADIOBIOLOGY – RADIATION ONCOLOGY I - L
N3-5010-Θ	RADIOTHERAPEUTIC ONCOLOGY I - T		**6211AA (6211)**	RADIOBIOLOGY – RADIATION ONCOLOGY I - T
N3-5020	NUCLEAR MEDICINE PHYSICS		**6251AA (6251)**	PHYSICS OF NUCLEAR MEDICINE
N3-5030	MEDICAL IMAGING III		**6220AA (6221-6222)**	COMPUTED TOMOGRAPHY
			6231AA (6231)	INTRODUCTION TO MAGNETIC RESONANCE IMAGING – MEDICAL IMAGE PROCCESSING
N3-5030-E	MEDICAL IMAGING III – L		**6222AA (6222)**	COMPUTED TOMOGRAPHY - L
N3-5030-Θ	MEDICAL IMAGING III – T		**6221AA (6221)**	COMPUTED TOMOGRAPHY - T
N3-5040	ENGLISH FOR RADIOLOGIC TECHNOLOGISTS		**2061 (2061)**	BIOMEDICAL ENGLISH TERMINOLOGY
N3-5A50	SPECIALIZED APPLICATIONS OF RADIOGRAPHY		**6271AA (6271 6β)**	SPECIALIZED APPLICATIONS OF RADIOLOGY
N3-5B50	EMERGENCY RADIOLOGY		**8271AA (8271 5γ)**	MUSCULOSKELETAL AND CARDIOVASCULAR SYSTEM IMAGING
N3-5060	RADIATION PROTECTION		**7240AA (7241-7242)**	RADIATION PROTECTION

N3-5060-E	RADIATION PROTECTION – L		**7242AA (7242)**	RADIATION PROTECTION - L
N3-5060-Θ	RADIATION PROTECTION – T		**7241AA (7241)**	RADIATION PROTECTION - T

	6th Semester			
N3-6010	MEDICAL IMAGING IV		**7210AA (7211-7212)**	MAGNETIC RESONANCE IMAGING
			7251(7251)	SPECIALIZED APPLICATIONS OF COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING – HYBRID IMAGING TECHNIQUES
N3-6010-E	MEDICAL IMAGING IV – L		**7212AA (7212)**	MAGNETIC RESONANCE IMAGING - L
N3-6010-Θ	MEDICAL IMAGING IV – T		**7211AA (7211)**	MAGNETIC RESONANCE IMAGING - T
N3-6020	RADIOTHERAPEUTIC ONCOLOGY II		**7220AA (7221-7222)**	RADIATION ONCOLOGY II – MODERN APPLICATIONS OF RADIOTHERAPY
N3-6020-E	RADIOTHERAPEUTIC ONCOLOGY II - L		**7222AA (7222)**	RADIATION ONCOLOGY II – MODERN APPLICATIONS OF RADIOTHERAPY- L
N3-6020-Θ	RADIOTHERAPEUTIC ONCOLOGY II - T		**7221AA (7221)**	RADIATION ONCOLOGY II – MODERN APPLICATIONS OF RADIOTHERAPY- T
N3-6030	NUCLEAR MEDICINE I		**7230AA (7231-7232)**	NUCLEAR MEDICINE I
N3-6030-E	NUCLEAR MEDICINE I – L		**7232AA (7232)**	NUCLEAR MEDICINE I -L
N3-6030-Θ	NUCLEAR MEDICINE I – T		**7231AA (7231)**	NUCLEAR MEDICINE I -T
N3-6040	COMBINATION THERAPIES IN ONCOLOGY		**3011 (3011)**	PHARMACOLOGY
N3-6050	RESEARCH METHODOLOGY		**3021 (3021)**	RESEARCH METHODOLOGY

N3-6A60	SPECIALIZED APPLICATIONS of COMPUTED TOMOGRAPHY		**8282AA (8282 5ε)**	NUTRITION AND HEALTH
N3-6B60	ULTRASONOGRAPHY		**6281AA (6281 6γ)**	BREAST IMAGING

	7th Semester			
N3-7010	RADIOTHERAPEUTIC ONCOLOGY III		**8240AA (8241-8242)**	RADIATION ONCOLOGY III – COMBINATION THERAPIES IN ONCOLOGY
N3-7010-Ε	RADIOTHERAPEUTIC ONCOLOGY III - L		**8242AA (8242)**	RADIATION ONCOLOGY III – COMBINATION THERAPIES IN ONCOLOGY - L
N3-7010-Θ	RADIOTHERAPEUTIC ONCOLOGY III - T		**8241AA (8241)**	RADIATION ONCOLOGY III – COMBINATION THERAPIES IN ONCOLOGY - T
N3-7020	RADIOGRAPHIC PATHOLOGY		**8231AA (8231)**	RADIOGRAPHIC PATHOLOGY
N3-7030	NUCLEAR MEDICINE II		**8210AA (8211-8212)**	NUCLEAR MEDICINE II
N3-7030-Ε	NUCLEAR MEDICINE II – L		**8212AA (8212)**	NUCLEAR MEDICINE II - L
N3-7030-Θ	NUCLEAR MEDICINE II – T		**8211AA (8211)**	NUCLEAR MEDICINE II - T
N3-7040	NUCLEAR MEDICINE THERAPIES		**8221AA (8221)**	NUCLEAR MEDICINE THERAPIES
N3-7A50	SPECIALIZED APPLICATIONS of MAGNETIC RESONANCE IMAGING		**8261AA (8261 5β)**	HYBRID IMAGING
N3-7B50	SPECIALIZED MEDICAL APPLICATIONS		**8281AA (8281 5δ)**	SPECIALIZED MEDICAL APPLICATIONS

	8th Semester			
ΠΡΑΚΤ	UNDERGRADUATE THESIS		**8251AA (8251 5α)**	UNDERGRADUATE THESIS
ΠΤΥΧ	FINAL CLINICAL PLACEMENT		**6261AA (6261 6α)**	CLINICAL PRACTICE PLACEMENT
			NEW SUBJECTS WITHOUT EQUIVALENT	
			1031 (1031)	CELL BIOLOGY
			8283AA (8283 5f)	AGEING AND LONGEVITY
			1041 (1041-1042)	BIOPHYSICS
			1042 (1042)	BIOPHYSICS - T
			1041 (1041)	BIOPHYSICS - L

CLARIFICATION: The codes of the new courses as they appear in the official computerized system (e-class) are depicted in red, whereas the codes of the particular courses as they appear in the Course Curriculum in the departmental website https://bisc.uniwa.gr/courses/undergradute/ **are depicted in black in parentheses.**

STUDENTS OF THE UNIVERSITY OF WEST ATTICA (UNIWA) WHO WISH TO OBTAIN THE DEGREE OF THE FORMER TECHNOLOGICAL EDUCATIONAL INSTITUTION OF ATHENS (TEI)

FOLLOW THE LIST BELOW INCLUDING THE CASES OF EXCEPTION ATTACHED AT THE END*

DIVISION OF RADIOLOGY AND RADIOTHERAPY				
Previous Study Program (TEI)			**Current Study Program (UNIWA)**	
Code	**Subject Title**	**SP**	**Code**	**Subject Title**
	1st Semester			
AA101	ANATOMY I		**1011 – 1012**	ANATOMY I
AA102	BIOSTATISTICS*		**2061 – 2062**	BIOSTATISTICS
AA103	HYGIENE AND EPIDEMIOLOGY		**4241AA**	HYGIENE AND EPIDEMIOLOGY – PUBLIC HEALTH
AA104	PHYSIOLOGY		**2051 – 2052**	PHYSIOLOGY
AA105	PRINCIPLES OF PHYSICS		**1041-1042**	BIOPHYSICS
AA106	RADIOLOGIC TECHNOLOGY - I		**3079 – 3080**	INTRODUCTION TO MEDICAL IMAGING AND RADIOTHERAPY
	2nd Semester			

AA201	ANATOMY II		**2011**	ANATOMY II
AA202	FIRST AID		**3031 – 3032**	FIRST AID
AA203	ELEMENTS OF PSYCHOLOGY AND COMMUNICATION		**2041**	INTRODUCTION TO BIOMEDICAL SCIENCES
AA204	PATIENT MANAGEMENT IN MEDICAL IMAGING		**4211AA - 4212AA**	PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS AND PATIENT MANAGEMENT IN THE DEPARTMENT OF MEDICAL IMAGING
AA205	RADIOLOGIC TECHNOLOGY II		**4221AA-4222AA**	RADIOLOGY I
AA206	RADIATION PHYSICS I		**4231AA**	PHYSICS OF RADIOLOGY
	3rd Semester			
AA301	HEALTH INFORMATION TECHNOLOGY*		**1051**	BIOINFORMATICS
			1061	MATHEMATICS FOR BIOMEDICAL SCIENCES
AA302	DIGITAL IMAGING		**5241AA**	INTRODUCTION TO COMPUTED TOMOGRAPHY – DIGITAL IMAGING
AA303	BASIC PRINCIPLES OF MEDICINE*		**3053**	GENERAL MEDICINE
			3041	GENERAL MICROBIOLOGY
AA304	MEDICAL IMAGING I		**5231AA-5232AA**	RADIOLOGY II
AA305	PRINCIPLES of ADMINISTRATION and MANAGEMENT of HEALTH UNITS		**1021-1022**	GENERAL AND INORGANIC CHEMISTRY
	4th Semester			

AA401	RADIATION BIOLOGY		**3065**	INTRODUCTION TO RADIATIONS
AA402	RADIATION PHYSICS II		**5251AA-5252AA**	PHYSICS OF RADIOTHERAPY
AA403	SECTIONAL ANATOMY		**5221AA**	SECTIONAL ANATOMY
AA404	MEDICAL IMAGING II		**6241AA-6242AA**	RADIOLOGY III
AA405α	MEDICAL IMAGE ANALYSIS		**6291AA**	PATTERN RECOGNITION IN MEDICAL IMAGES - APPILICATIONS IN RADIOLOGY
AA405β	SPECIALIZED TOPICS IN HEALTH INFORMATION TECHNOLOGY		**6292AA**	HUMAN GENETICS
AA405γ	CHEMISTRY		**1021-1022**	GENERAL AND INORGANIC CHEMISTRY
AA406	PROFESSIONAL DEONTOLOGY & BIOETHICS		**4251AA**	BIOETHICS AND MEDICAL DEONTOLOGY
	5th Semester			
AA501	RADIOTHERAPEUTIC ONCOLOGY I		**6211AA-6212AA**	RADIOBIOLOGY – RADIATION ONCOLOGY I
AA502	NUCLEAR MEDICINE PHYSICS		**6251AA**	PHYSICS OF NUCLEAR MEDICINE
AA503	MEDICAL IMAGING III*		**6221AA-6222AA**	COMPUTED TOMOGRAPHY
			6231AA	INTRODUCTION TO MAGNETIC RESONANCE IMAGING – MEDICAL IMAGE PROCESSING
AA504	ENGLISH FOR RADIO LOGIC TECHNOLOGISTS		**2061**	ENGLISH FOR BIOMEDICAL SCIENCES

AA505α	SPECIALIZED APPLICATIONS OF RADIOGRAPHY		**6271AA**	SPECIALIZED APPLICATIONS OF RADIOLOGY
AA505β	EMERGENCY RADIOLOGY		**8271AA**	MUSCULOSKELETAL AND CARDIOVASCULAR SYSTEM IMAGING
AA506	RADIATION PROTECTION		**7241AA-7242AA**	RADIATION PROTECTION
	6th Semester			
AA601	MEDICAL IMAGING IV*		**7211AA-7212AA**	MAGNETIC RESONANCE IMAGING
			7251	SPECIALIZED APPLICATIONS OF COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING – HYBRID IMAGING TECHNIQUES
AA602	RADIO THERAPEUTIC ONCOLOGY II		**7221AA-7222AA**	RADIATION ONCOLOGY II – MODERN APPLICATIONS OF RADIOTHERAPY
AA603	NUCLEAR MEDICINE I		**7231AA-7232AA**	NUCLEAR MEDICINE I
AA604	COMBINATION THERAPIES IN ONCOLOGY		**3011**	PHARMACOLOGY
AA605	RESEARCH METHODOLOGY		**3021**	RESEARCH METHODOLOGY
AA606α	SPECIALIZED APPLICATIONS OF COMPUTED TOMOGRAPHY		**8282AA**	NUTRITION AND HEALTH
AA606β	ULTRASONOGRAPHY		**6281AA**	BREAST IMAGING
	7th Semester			
AA701	RADIO THERAPEUTIC ONCOLOGY III		**8241AA-8242AA**	RADIATION ONCOLOGY III – COMBINATION THERAPIES IN ONCOLOGY

AA702	RADIO GRAPHIC PATHOLOGY		**8231AA**	RADIO LOGIC PATHOLOGY
AA703	NUCLEAR MEDICINE II		**8211AA-8212AA**	NUCLEAR MEDICINE II
AA704	NUCLEAR MEDICINE THERAPIES		**8221AA**	NUCLEAR MEDICINE THERAPIES
AA705α	SPECIALIZED APPLICATIONS OF MAGNETIC RESONANCE IMAGING		**8261AA**	HYBRID IMAGING
AA705β	SPECIALIZED MEDICAL APPLICATIONS		**8281AA**	SPECIALIZED MEDICAL APPLICATIONS
	8th Semester			
AA801	UNDERGRADUATE THESIS		**8251AA**	UNDERGRADUATE THESIS
AA802	FINAL CLINICAL PLACEMENT		**6261AA**	CLINICAL PRACTICE PLACEMENT
			NEW SUBJECTS WITHOUT EQUIVALENT	
			1031	CELL BIOLOGY
			8283AA	AGING AND LONGEVITY

6. Study Program of the Division of Medical Laboratories Science

6.1. General characteristics and descriptive elements of course curriculum

Academic character of the course curriculum – Medical Laboratory Science Division

6.1.1 Subject area of Studies

The studies' content of the Medical Laboratories Science (MLS) Division, covers the subject area of the Biomedical Laboratory Technology Applications, as these apply to the Microbiology and Virology, Hematology, Transfusion Medicine, Immunology and Histocompatibility, Biochemistry and Clinical Chemistry, Pathology and Oncology, Cytology, Endocrinology, Toxicology, Genetics, Molecular Biology, Laboratory Animal models and Nuclear Medicine laboratories.
The University Degree appears in the European Universities as Biomedical Sciences as well as in the USA, Canada and Australia Universities as Medical Laboratory Sciences and the graduate is referred to as a Biomedical Laboratory Scientist (BLS) or Medical Laboratory Scientist or Technologist (MLS, MLT) respectively.

6.1.2 Purpose of the course curriculum

The course curriculum focuses on the teaching and practice of specialized Scientific Knowledge so as the Faculty's graduates are able to begin fully employed in sectors which offer services relevant to the subject area, either in the Public or Broader Public Sector or in the Private Sector following laboratory areas:

- Hematology,
- Transfusion Medicine (Blood Bank),
- Immunology, Histocompatibility,
- Biochemistry, Clinical Chemistry,
- Genetics,
- Criminology,
- Endocrinology (Hormonology),
- Histopathology (Pathology, Oncology),
- Cytology,
- Microbiology, Virology, Mycology, Parasitology, Culture media,
- Molecular Biology,
- Cord Blood,
- Laboratory Animal Facility,
- Nuclear Medicine (radio immunology, irradiation of blood and blood products etc.),
- Toxicology
- Pharmacology,

as well as any other type of laboratory relevant to their subject area.

Moreover, the program focuses on the achievement of the ability to organize, manage and design the aforementioned laboratories as well as the ability of applying the knowledge and methods that have been acquired after the acquisition of 240 credit units.

6.1.3 Studies structure- Medical Laboratories Science Division

The duration of studies in the Biomedical Sciences Department is 8 (eight) semesters. The initial (3) three semesters offer both general and specific background knowledge and are common for the Divisions of “Medical Laboratories Science”, “Radiation and Radiotherapy”, “Aesthetics & Cosmetic Science”, “Dental Technology”, and “Optics and Optometry”. The following (5) five semesters offer specialization background knowledge for each Division respectively.
The studies are comprised of theoretical teaching, laboratory training, accomplishment of projects focusing on studying cases of medical content (Seminar), where students are given the opportunity to gain experience in teaching and elaborating upon a topic for each subject area.
During the last semester, 8th (eighth), the “Medical Laboratories Science” Division students must choose optional subjects (courses) in order to complete the remaining 30 (thirty) credit units so as to successfully graduate.
Two (2) out of the 20 (twenty) offered optional subjects are the Undergraduate Thesis and Undergraduate Internship, from each of which the student can acquire 6 (six) credit units. The student can acquire 6 (six) credit units from each of the rest theoretical subjects of free choice.

6.1.4 Undergraduate Internship

The Undergraduate Internship as a professional Medical Laboratories Scientist intent to offer the students the chance to:

i. realize and appreciate the role they are called to fulfill in the field of Health and Biomedical Laboratory Sciences.
ii. gain the necessary practical and empirical skills which lead to the proper function of a clinical Laboratory.
iii. take part (if they wish) in research programs (projects) which take place in the trainee ship establishment.

The establishments where the Undergraduate Internship takes place may be the following:

- Primary healthcare Clinical laboratories. These are mostly private bio pathological laboratories of diagnostic centers or sole proprietorship of freelance bio pathologists.
- Clinical laboratories of tertiary hospitals. These are laboratory departments in Athens and provincial public and private hospitals.

These laboratory departments are usually:

- Hematology
- Transfusion Medicine
- Immunology
- Biochemistry
- Histocompatibility
- Cytology
- Microbiology
- Pathology
- Biomedical laboratories of various public sector bodies such as:
- Food testing Microbiological and Chemical laboratories of the Agricultural Economics and Rural Development Ministry and the Development Ministry.

- Microbiological, Immunological, Biochemical and Molecular Biology laboratories of the Agricultural Economics and Rural Development Ministry's veterinary services.
- Toxicology laboratories of the Ministry of Labor and Social Solidarity and the Ministry of Health and Providence.
- Public and private non-profit Research laboratories. More specifically the graduates can perform The Undergraduate Internship in laboratories and institutes of Microbiology, Hematology, Pathology, Biochemistry, Molecular Biology, Laboratory animal Facilities (etc).

In the laboratories and Research & Development departments of industries which are dealing with the production of:

- Medical diagnostic equipment,
- Food and beverages and
- Medicine and cosmetics.

In clinical or R&D laboratories abroad through ERASMUS.
The Undergraduate Internship is fulfilled under the Division's members of staff supervision and is coordinated from the Undergraduate Internship Committee.

The selection criteria for the Undergraduate Internship of students are:

- 70%: The number of completed subjects.
- 30%: The average grade of the completed subjects.

The assessment of the Undergraduate Internship is carried out by all the participants involved in its organization. More specifically, the final grade is a result of the following percentages:

- 40%: the assessment of the trainee ship establishment supervisor's
- 40%: the assessment of the Division's staff member supervisor
- 20%: the assessment of the Undergraduate Internship Committee

The Undergraduate Internship Committee defines the way of grading the subject of the "Undergraduate Internship" by the supervisors of the trainee ship establishment and the University of West Attica.

6.1.5 Undergraduate Thesis (Dissertation)

The Undergraduate Thesis allows the student to gain experience in the study, research and writing upon a specialization topic which may entail a thorough literature review or basic research. The Undergraduate Thesis is recommended to those students who wish to pursue postgraduate studies or follow the path of research. The Undergraduate Thesis's assessment criteria are the following:

- Content and validity correctness (60%)
- Referencing sufficiency (20%)
- Presentation (10%)
- Elements of innovation and research perspectives (5%)
- Proper use of Greek language (5%)

6.1.6 Professional rights of graduates

The professional rights of the Department's graduates are defined in the Presidential Decree no. 163, article 1 (National Gazette 118/14-6-1996 first issue).

Upon successful completion of their studies, the Department's graduates have gained the necessary knowledge and laboratory/practical experience in order to be either self-employed or co-operate with other scientists and technologists in the following fields:

1. Hematology
2. Transfusion Medicine
3. Immunology
4. Biochemistry – Clinical Chemistry
5. Histopathology - Pathology
6. Microbiology
7. Mycology
8. Parasitology
9. Laboratory Animal Science

Within these subjects and the relative sectors, the Department's graduates may undertake the following responsibilities:

1. Giving instructions to people who undergo medical examination for their proper preparation as well as the appropriate sample collection for each examination.
2. Sampling of biological fluids.
3. Receiving the samples that are delivered to the laboratory.
4. Preparation of the samples that need to be examined.
5. Production of all the necessary materials, reagents and solutions.
6. Smear preparation and performance of staining techniques.
7. Preparation and testing of all sorts of instruments and machines that are intended for use.
8. After conducting the examination, they take responsibility and sign the part of the laboratory examination which was assigned to them.
9. Moreover, in the Transfusion Medicine laboratory (Blood Bank) they give instructions to volunteer blood donors for their proper preparation. They check the volunteers' ability to donate blood prior to blood collection, while afterwards they may take up the processing of blood into components etc.
10. Especially in the Animal Model Units they are responsible for the welfare of the laboratory animals, they supervise the proper housing, the balanced diet and living, and they organize their reproduction. They are involved in the calculation of the doses of the medicinal products administrated and the experimental substances In cooperation with the responsible veterinarian of the Unit, they shall be involved in experimental surgical procedures carried out in a painless manner, in accordance with the International Standards of 3R on the protection of laboratory animals, by administering and controlling the sedation and post-operative analgesia of the animals.
11. Cooperate with the investigator in relation to the selection of appropriate Animal Models standards used in the in vivo experimental procedure. They also participate in the design of the laboratory layout, the choice of equipment (machines, instruments), while they supervise the proper regular maintenance and cleaning of

machines, instruments, devices etc. applying the required hygiene and safety regulations.

12. They undertake the selection and application of the most suitable laboratory methods.
13. The graduates participate in consumable medical supplies' committees, qualitative test results, keeping up records, projects and research studies carried out by the relevant laboratories.

6.2 Division course curriculum tables

ABBREVIATIONS
General Background Course: GBC
Specific Background Course: SBC
Specialization Course: SC
Compulsory Elective: CE
Compulsory (C)

Study Guide of the Medical Laboratory Division (semesters 4th, 5th, 6th, 7th and 8th)

Table 6.1 – 4th Semester study guide

Course code	Order No	4th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
4011-4012	**1**	MOLECULAR BIOLOGY	3	3	6	171	6	SBC
4021	**2**	BIOSAFETY	2	0	2	60	2	SBC
4031-4032	**3**	BIOCHEMISTRY II	3	2	5	144	5	SBC
4041	**4**	HUMAN GENETICS	3	0	3	120	4	SBC
4051-4052	**5**	GENERAL ANALYSIS OF BIOLOGICAL SAMPLES	2	2	4	114	4	SC
4061	**6**	GENERAL HISTOLOGY	3	0	3	150	5	SBC
4071-4072	**7**	BIOLOGICAL SAMPLES COLLECTION-VENIPUNCTURE	2	2	4	114	4	SC
		TOTAL	**18**	**9**	**27**	**873**	**30**	

Table 6.2 – 5th Semester study guide

Course code	Order No	5th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
5011-5012	**1**	HEMATOLOGY I	4	4	8	240	8	SC
5021-5022	**2**	BACTERIOLOGY	3	4	7	210	7	SC
5031-5032	**3**	ORGAN SYSTEM HISTOLOGY-CYTOLOGY	3	4	7	210	8	SC
5041-5042	**4**	CLINICAL CHEMISTRY I	4	3	7	210	7	SC
		TOTAL	**14**	**15**	**29**	**870**	**30**	

Table 6.3 – 6th Semester study guide

Course code	Order No	6th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
6011-6012	**1**	HEMATOLOGY II	4	2	6	178	7	SC
6021-6022	**2**	IMMUNOLOGY	4	3	7	207	8	SC
6031	**3**	ACCREDITATION – CERTIFICATION	2	0	2	60	2	SBC
6041-6042	**4**	VIROLOGY	3	3	6	177	6	SC
6051-6052	**5**	CLINICAL CHEMISTRY II	3	3	6	177	7	SC
		TOTAL	**16**	**11**	**27**	**799**	**30**	

Table 6.4 – 7th Semester study guide

Course code	Order No	7th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
7011-7012	**1**	TRANSFUSION THERAPY	3	2	5	146	6	SC
7021	**2**	CLINICAL MICROBIOLOGY	3	0	3	90	3	SC
7031-7032	**3**	ASSISTED REPRODUCTIVE TECHNOLOGY	2	2	4	116	4	SC
7041-7042	**4**	MYCOLOGY	2	2	4	116	4	SC
7051-7052	**5**	PATHOLOGY	3	2	5	146	6	SC
7061-7062	**6**	PARASITOLOGY	3	3	6	174	7	SC
		TOTAL	**16**	**11**	**27**	**788**	**30**	

Table 6.5 – 8th Semester study guide

Course code	Order No	8th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
8011	**1**	BIOTECHNOLOGY*	3	0	3	180	6	SBC/CE
8021	**2**	AGEING - LONGEVITY*	3	0	3	180	6	SBC/CE
8031	**3**	INTRODUCTION TO LABORATORY ANIMAL SCIENCE*	3	0	3	180	6	SC/CE
8041	**4**	SPECIAL ISSUES OF LABORATORY HEMATOLOGY – TRANSFUSION MEDICINE BLOOD DONATION*	3	0	3	180	6	SC/CE
8051	**5**	SPECIAL ISSUES OF CLINICAL CHEMISTRY*	3	0	3	180	6	SC/CE
8061	**6**	SPECIAL ISSUES IN PATHOLOGY - ONCOLOGY*	3	0	3	180	6	SC/CE
8071	**7**	SPECIAL MEDICAL APPLICATIONS*	3	0	3	180	6	SBC/CE
8081	**8**	LABORATORY EVALUATION OF THE SURGICAL PATIENT*	3	0	3	180	6	SBC/CE
8091	**9**	LABORATORY AND CLINICAL ENDOCRINOLOGY*	3	0	3	180	6	SC/CE
8101	**10**	REGENERATIVE MEDICINE METHODOLOGY*	3	0	3	180	6	SC/CE
8111	**11**	INFECTIOUS DISEASES EPIDEMIOLOGY	3	0	3	180	6	SC/CE
8121	**12**	FOOD AND WATER MICROBIOLOGY	3	0	3	180	6	SC/CE
8131	**13**	HYGIENE EPIDEMIOLOGY AND PUBLIC HEALTH	3	0	3	180	6	SBC/CE
8141	**14**	NUTRITION AND HEALTH*	3	0	3	180	6	SBC/CE
8151	**15**	PATTERN RECOGNITION IN MEDICAL IMAGES✦	3	0	3	180	6	SBC/CE
8161	**16**	BIOETHICS*	3	0	3	180	6	SBC/CE
8171	**17**	TRANSFUSION THERAPY HISTOCOMPATIBILITY *	3	0	3	180	6	SC/CE
8181	**18**	TOXICOLOGY*	3	0	3	180	6	SC/CE
8191	**19**	UNDERGRADUATE THESIS (DISSERTATION) **	-	-	0	360	12	SC/CE
8201	**20**	UNDERGRADUATE INTERNSHIP***	-	-	-	360	12	SC/CE
		TOTAL	**30**	**0**	**30**	**900**	**30**	

✦ **Replacement of the "Patient advocacy and stress management" course (8th Sem.) of the Medical Laboratory Division with the "Pattern recognition in medical images" course (8th Sem.) for 3 hours/week with the initiation of the new academic year 2019-2020 (ASSEMBLY no. 5/4.04.19)**

8th Semester elective courses

* A student must undertake 5 compulsory elective courses of the 8th semester in case that he/she chooses NOT to select either an undergraduate thesis or an undergraduate internship.
** The undergraduate thesis is an optional course that can replace 2 compulsory elective courses of the 8th semester.
*** The undergraduate internship course, if included in the study guide, is a compulsory elective course that can replace 2 compulsory elective courses of the 8th semester

	Course type	No	Credits (ECTS)
1st Option	Undergraduate Thesis	1	12
	Undergraduate Internship	1	12
	Compulsory Elective courses	1	6
	Total:	**3**	**30**
2nd Option	Undergraduate Thesis	0	0
	Undergraduate Internship	1	12
	Compulsory Elective courses	3	18
	Total:	**4**	**30**
3rd Option	Undergraduate Thesis	1	12
	Undergraduate Internship	0	0
	Compulsory Elective courses	3	18
	Total:	**4**	**30**
4th Option	Undergraduate Thesis	0	0
	Undergraduate Internship	0	0
	Compulsory Elective courses	5	30
	Total:	**5**	**30**

ABBREVIATIONS

General Background Course: GBC
Specific Background Course: SBC
Specialization Course: SC
Compulsory Elective: CE, Compulsory (C)

EQUIVALENTS (4th,5th, 6th,7th,8th SEMESTER) - ACADEMIC YEAR 2019-20

DIVISION OF MEDICAL LABORATORIES SCIENCE

Old course			New course	
Course code	Title	SG	Course code	Title
	1st Semester		New SG (SG-POSTED)	
N2-1010	ANATOMY I		1010 (1011-1012)	ANATOMY I
N2-1010-L	ANATOMY I –L		1012 (1012)	ANATOMY I –L
N2-1010-T	ANATOMY I –T		1011 (1011)	ANATOMY I –T
N2-1020	BIOPHYSICS		1040 (1041-1042)	BIOPHYSICS
N2-1020-E	BIOPHYSICS –L		1042 (1042)	BIOPHYSICS –L
N2-1020-Θ	BIOPHYSICS –T		1041 (1041)	BIOPHYSICS –T
N2-1030	PHYSIOLOGY I		2050 (2051-2052)	PHYSIOLOGY
N2-1030-E	PHYSIOLOGY I-L		2052 (2052)	PHYSIOLOGY –L
N2-1030-Θ	PHYSIOLOGY I-T		2051 (2051)	PHYSIOLOGY –T
N2-1040	INORGANIC AND ANALYTICAL CHEMISTRY		1020 (1021-1022)	GENERAL & INORGANIC CHEMISTRY
N2-1040-E	INORGANIC AND ANALYTICAL CHEMISTRY -L		1022 (1022)	GENERAL & INORGANIC CHEMISTRY –L
N2-1040-Θ	INORGANIC AND ANALYTICAL CHEMISTRY –T		1021 (1021)	GENERAL & INORGANIC CHEMISTRY –T
			3077-E (3078)	PRINCIPLES OF INSTRUMENTAL ANALYSIS –L
N2-1050	INTRODUCTION TO BIOMEDICAL SCIENCES -BIOMEDICAL LABORATORY SAFETY		2041 (2041)	INTRODUCTION TO BIOMEDICAL SCIENCES
N2-1050-E	INTRODUCTION TO BIOMEDICAL SCIENCES -BIOMEDICAL LABORATORY SAFETY –L		4021IE (4021)	BIO SAFETY
N2-1050-Θ	INTRODUCTION TO BIOMEDICAL SCIENCES -BIOMEDICAL LABORATORY SAFETY –T			
N2-1060	BIOINFORMATICS		1051 (1051)	BIO INFORMATICS
N2-1060-E	BIOINFORMATICS –L			
N2-1060-Θ	BIOINFORMATICS –T			

	2nd Semester			
N2-2010	ORGANIC CHEMISTRY		2031 (2031)	ORGANIC CHEMISTRY
N2-2010-E	ORGANIC CHEMISTRY –L			
N2-2010-Θ	ORGANIC CHEMISTRY –T			
N2-2020	PHYSIOLOGY II		2050 (2051-2052)	PHYSIOLOGY
N2-2020-E	PHYSIOLOGY II-L		2052 (2052)	PHYSIOLOGY –L
N2-2020-Θ	PHYSIOLOGY II-T		2051 (2051)	PHYSIOLOGY –T
N2-2030	CELL BIOLOGY		1031 (1031)	CELL BIOLOGY
N2-2040	FIRST AID		3030 (3031-3032)	FIRST AID
N2-2040-E	FIRST AID –L		3032 (3032)	FIRST AID –L
N2-2040-Θ	FIRST AID –T		3031 (3031)	FIRST AID –T
N2-2050	ANATOMY II		2011 (2011)	ANATOMY II
N2-2050-E	ANATOMY II –L			
N2-2050-Θ	ANATOMY II –T			
N2-2060	QUANTIFICATION METHODOLOGIES		2060 (2061-2062)	BIOSTATISTICS
			1061	MATHEMATICS FOR BIOMEDICAL SCIENCES
N2-2060-E	QUANTIFICATION METHODOLOGIES –L		2062 (2062)	BIOSTATISTICS –L
N2-2060-Θ	QUANTIFICATION METHODOLOGIES –T		2061 (2061)	BIOSTATISTICS –T

	3rd Semester			
N2-3010	GENERAL MICROBIOLOGY		3041 (3041)	GENERAL MICROBIOLOGY
N2-3010-E	GENERAL MICROBIOLOGY –L			
N2-3010-Θ	GENERAL MICROBIOLOGY –T			
N2-3020	BIOCHEMISTRY		2021 (2021)	BIOCHEMISTRY
N2-3020-E	BIOCHEMISTRY –L		4032IE(4032)	APPLIED BIOCHEMISTRY-L
N2-3020-Θ	BIOCHEMISTRY –T			
N2-3030	GENERAL HISTOLOGY		4061IE(4061)	GENERAL HISTOLOGY
N2-3030-E	GENERAL HISTOLOGY –L			
N2-3030-Θ	GENERAL HISTOLOGY –T			
N2-3040	APPLIED MOELCULAR BIOLOGY		4010IE (4011-4012)	MOLECULAR BIOLOGY
N2-3040-E	APPLIED MOELCULAR BIOLOGY –L		4012IE(4012)	MOLECULAR BIOLOGY –L
N2-3040-Θ	APPLIED MOELCULAR BIOLOGY –T		4011IE(4011)	MOLECULAR BIOLOGY –T
N2-3050	BIOLOGICAL FLUID SAMPLING TECHNIQUES		4070IE (4071-4072)	BLOOD AND BIOLOGICAL FLUID SAMPLING TECHNIQUES
N2-3050-E	BIOLOGICAL FLUID SAMPLING TECHNIQUES –L		4072IE(4072)	BLOOD AND BIOLOGICAL FLUID SAMPLING TECHNIQUES –L
N2-3050-Θ	BIOLOGICAL FLUID SAMPLING TECHNIQUES –T		4071IE(4071)	BLOOD AND BIOLOGICAL FLUID SAMPLING TECHNIQUES –T
N2-3060	GENETICS		4041IE(4041)	HUMAN GENETICS
N2-3060-E	GENETICS-L			
N2-3060-Θ	GENETICS-T			

	4th Semester			
N2-4010	SPECIAL HISTOLOGY-CYTOPATHOLOGY		5030IE (5031-5032)	ORGAN SYSTEM HISTOLOGY-CYTOLOGY
N2-4010-E	SPECIAL HISTOLOGY-CYTOPATHOLOGY –L		5032IE(5032)	ORGAN SYSTEM HISTOLOGY-CYTOLOGY –L
N2-4010-Θ	SPECIAL HISTOLOGY-CYTOPATHOLOGY –T		5031IE(5031)	ORGAN SYSTEM HISTOLOGY-CYTOLOGY –T
N2-4020	HEMATOLOGY I		5010IE (5011-5012)	HEMATOLOGY I
N2-4020-E	HEMATOLOGY I –L		5012IE(5012)	HEMATOLOGY I –L
N2-4020-Θ	HEMATOLOGY I –T		5011IE(5011)	HEMATOLOGY I –T
N2-4030	BACTERIOLOGY		5020IE (5021-5022)	BACTERIOLOGY
N2-4030-E	BACTERIOLOGY –L		5022IE(5022)	BACTERIOLOGY –L
N2-4030-Θ	BACTERIOLOGY –T		5021IE(5021)	BACTERIOLOGY –T
N2-4040	ANALYTICAL ASSAYS OF BIOLOGICAL FLUIDS		4050IE (4051-4052)	ANALYTICAL ASSAYS OF BIOLOGICAL SAMPLES
N2-4040-E	ANALYTICAL ASSAYS OF BIOLOGICAL FLUIDS –L		4052IE(4052)	ANALYTICAL ASSAYS OF BIOLOGICAL SAMPLES –L
N2-4040-Θ	ANALYTICAL ASSAYS OF BIOLOGICAL FLUIDS –T		4051IE(4051)	ANALYTICAL ASSAYS OF BIOLOGICAL SAMPLES –T
N2-4050	MYCOLOGY		7040IE (7041-7042)	MYCOLOGY
N2-4050-E	MYCOLOGY –L		7042IE(7042)	MYCOLOGY –L
N2-4050-Θ	MYCOLOGY –T		7041IE(7041)	MYCOLOGY –T
N2-4060	PATHOPHYSIOLOGY		3064(3064 6δ)	PATHOPHYSIOLOGY *

	5TH SEMESTER			
N2-5010	HISTOPATHOLOGY		7050IE (7051-7052)	PATHOLOGY
N2-5010-L	HISTOPATHOLOGY–L		7052IE(7052)	PATHOLOGY –L
N2-5010-T	HISTOPATHOLOGY–T		7051IE(7051)	PATHOLOGY –T
N2-5020	CLINICAL MICROBIOLOGY		7021IE(7021)	CLINICAL MICROBIOLOGY
N2-5020-L	CLINICAL MICROBIOLOGY –L			
N2-5020-T	CLINICAL MICROBIOLOGY –T			
N2-5030	CLINICAL CHEMISTRY I		5040IE (5041-5042)	CLINICAL CHEMISTRY I
N2-5030-L	CLINICAL CHEMISTRY I–L		5042IE(5042)	CLINICAL CHEMISTRY I–L
N2-5030-T	CLINICAL CHEMISTRY I–T		5041IE(5041)	CLINICAL CHEMISTRY I–T
N2-5040	HEMATOLOGY II		5010IE (5011-5012)	HEMATOLOGY I
N2-5040-L	HEMATOLOGY II–L		5012IE(5012)	HEMATOLOGY I–L
N2-5040-T	HEMATOLOGY II–T		5011IE(5011)	HEMATOLOGY I–T
N2-5050	HUMAN FERTILIZATION TECHNOLOGY		7030IE (7031-7032)	MEDICALLY ASSISTED FERTILIZATION METHODS
N2-5050-L	HUMAN FERTILIZATION TECHNOLOGY-L		7032IE(7032)	MEDICALLY ASSISTED FERTILIZATION METHODS-L
N2-5050-T	HUMAN FERTILIZATION TECHNOLOGY-T		7031IE(7031)	MEDICALLY ASSISTED FERTILIZATION METHODS-T
N2-5A60	ENGLISH MEDICAL TERMINOLOGY*		2071 (2071)	BIOMEDICAL ENGLISH TERMINOLOGY
N2-5B60	HEALTH PSYCHOLOGY *		8161IE(8161)	BIOETHICS*

	6TH SEMESTER			
N2-6010	IMMUNOLOGY		6020IE (6021-6022)	IMMUNOLOGY
N2-6010-L	IMMUNOLOGY-L		6022IE(6022)	IMMUNOLOGY–L
N2-6010-T	IMMUNOLOGY-T		6021IE(6021)	IMMUNOLOGY–T
N2-6020	HEMATOLOGY III		6010IE (6011-6012)	HEMATOLOGY II
N2-6020-L	HEMATOLOGY III–L		6012IE(6012)	HEMATOLOGY II–L
N2-6020-T	HEMATOLOGY III–T		6011IE(6011)	HEMATOLOGY II–T
N2-6030	TRANFUSION MEDICINE		7010IE (7011-7012)	TRANFUSION MEDICINE
N2-6030-L	TRANFUSION MEDICINE–L		7012IE(7012)	TRANFUSION MEDICINE–L
N2-6030-T	TRANFUSION MEDICINE-T		7011IE(7011)	TRANFUSION MEDICINE-T
N2-6040	CLINICAL CHEMISTRY II		6050IE (6051-6052)	CLINICAL CHEMISTRY II
N2-6040-L	CLINICAL CHEMISTRY II–L		6052IE(6052)	CLINICAL CHEMISTRY II–L
N2-6040-T	CLINICAL CHEMISTRY II–T		6051IE(6051)	CLINICAL CHEMISTRY II–T
N2-6A50	BIOTECHNOLOGY *		8011IE(8011)	BIOTECHNOLOGY *
N2-6A60	BIOETHICS *		8161IE(8161)	BIOETHICS*
N2-6B50	MEDICAL AND ENVIRONMENTAL TOXICOLOGY*		8181IE(8181)	TOXICOLOGY*
N2-6B60	LABORATORY EVALUATION OF THE SURGICAL PATIENT*		8081IE(8081)	LABORATORY EVALUATION OF THE SURGICAL PATIENT*

	7TH SEMESTER			
N2-7010	VIROLOGY		6040IE (6041-6042)	VIROLOGY
N2-7010-E	VIROLOGY-L		6042IE(6042)	VIROLOGY-L
N2-7010-Θ	VIROLOGY-T		6041IE(6041)	VIROLOGY-T
N2-7020	BIOMEDICAL LABORATORY ACCREDITATION		6031IE(6031)	LABORATORY ACCREDITATION-CERTIFICATION
N2-7030	PARASITOLOGY		7060IE (7061-7062)	PARASITOLOGY
N2-7030-E	PARASITOLOGY-L		7062IE(7062)	PARASITOLOGY-L
N2-7030-Θ	PARASITOLOGY-T		7061IE(7061)	PARASITOLOGY-T
N2-7040	RESEARCH METHODOLOGY-EPIDEMIOLOGY		3021 (3021)	RESEARCH METHODOLOGY
N2-7040-E	RESEARCH METHODOLOGY-EPIDEMIOLOGY-L			
N2-7040-Θ	RESEARCH METHODOLOGY-EPIDEMIOLOGY-T			
N2-7050	CLINICAL PHARMACOLOGY		3011 (3011)	PHARMACOLOGY
N2-7060	APPLIED BIOSTATISTICS		2060 (2061-2062)	BIOSTATISTICS
N2-7060-E	APPLIED BIOSTATISTICS-L		2062 (2062)	BIOSTATISTICS-L
N2-7060-Θ	APPLIED BIOSTATISTICS-T		2061 (2061)	BIOSTATISTICS-T
N2-7070	NOSOLOGY		3053 (3053 5γ)	NOSOLOGY*
N2-7A80	NUTRITION *		8141IE(8141)	NUTRITION AND HEALTH *
N2-7B80	INTRODUCTION IN LABORATORY ANIMAL SCIENCE *		8031IE(8031)	INTRODUCTION IN LABORATORY ANIMAL SCIENCE *

	8TH SEMESTER			
ΠΡΑΚΤ	UNDERGRADUATE INTERNSHIP		8201IE(8201)	UNDERGRADUATE INTERNSHIP*
ΠΤΥΧ	UNDERGRADUATE THESIS (DISSERTATION) *		8191IE(8191)	UNDERGRADUATE THESIS (DISSERTATION) *
			NEW UNIWA COURSES-NON EQUIVALENT	
1	COMPULSORY		3077 (3077-78 7δ)	PRINCIPLES OF INSTRUMENTAL ANALYSIS*
			3077-Ε (3078)	PRINCIPLES OF INSTRUMENTAL ANALYSIS-L
			3077-Θ (3077)	PRINCIPLES OF INSTRUMENTAL ANALYSIS-T
2	COMPULSORY		4030IE(4031-4032)	APPLIED BIOCHEMISTRY
			4031IE (4031)	APPLIED BIOCHEMISTRY -L
			4032IE (4032)	APPLIED BIOCHEMISTRY –T
3	Students completing the T.E.I. undergraduate study program, and intending to obtain UNIWA degree have to select one (1) of particular optional courses (3-14). There is no such obligation for students who have successfully attended the following courses: Nutrition and Health, Biotechnology, Introduction in Laboratory Animal Science, Laboratory Evaluation of the Surgical Patient, Bioethics and Medical and Environmental Toxicology.		8021IE (8021)	AGING-LONGEVITY*
4			8041IE (8041)	ADVANCED COURSES IN LABORATORY HEMATOLOGY-TRANSFUSION MEDICINE *
5			8051IE (8051)	ADVANCED COURSES IN CLINICAL CHEMISTRY *
6			8061IE (8061)	SPECIAL ISSUES IN PATHOLOGY - ONCOLOGY *
7			8071IE (8071)	SPECIAL MEDICAL APPLICATIONS *
8			8091IE (8091)	LABORATORY AND CLINICAL ENDOCRINOLOGY*
9			8101IE (8101)	REGENERATIVE MEDICINE METHODOLOGY *
10			8111IE (8111)	EPIDEMIOLOGY OF INFECTIOUS DISEASES*

11			**8121IE (8121)**	**FOOD AND WATER MICROBIOLOGY***
12			**8131IE (8131)**	**HYGIENE AND EPIDEMIOLOGY – PUBLIC HEALTH***
13			**8151IE (8151)**	**PATTERN RECOGNITION IN MEDICAL IMAGES**
14			**8171IE (8171)**	**TRANSFUSION THERAPY - HISTOCOMPATIBILITY***

The above mentioned equivalents refer to students intending to obtain T.E.I. degree or those having completed study duration of 13 or more semesters at the winter semester of the academic year 2018-19.
***Optional Compulsory Courses.**

All equivalents refer to T.E.I. students
The following notes refer to UNIWA students:
1. There is no obligation to attend the Laboratory of Principles of Instrumental Analysis for students successively attending the Laboratory of Inorganic and Analytic Chemistry.
2. There is no obligation to attend the Laboratory of Special Biochemistry for students successfully attending the Laboratory of Biochemistry. **3.** There is no obligation to attend the Laboratory of Anatomy I for students successfully attending the Laboratories of Anatomy I and Anatomy II.

DECLARATION: The codes of the new courses as they appear in the digital data form (e-study) are depicted in **red**, whereas the codes of the particular courses as they appear in the Course Curriculum in the division website http://bisc.uniwa.gr/ are depicted in **black** in parentheses.

7. Study Program of the Division of Dental Technology

7.1 Study Program- general characteristics and descriptive elements

Academic character of the Program – Division of Dental Technology

The study content of the Dental Technology science Division covers the cognitive subject of design, manufacture and repair of the various types of dental prosthetic appliances such as inlays, crowns, bridges, full and partial dentures, implant restorations, metal-ceramic and all-ceramic restorations, orthodontic appliances and maxillofacial prostheses.

A Dental Technician does not resell, does not modify, does not trade and is not just a mere operator. They manufacture from scratch and forms various materials into dental prostheses by combining knowledge from various Sciences such as the science of Biomaterials, Engineering, Physics, Biostatistics and also Health Sciences such as Physiology, Biology, Microbiology and others. They are also involved with facial aesthetics as a primary characteristic.

For the fabrication of these prostheses, biomaterials are used which are formed into shape via the use of contemporary scientific methods such as the science and technology of induction electronic devices, lasers and CAD/CAM, following the principles of biomechanics, so that they can be placed into the mouth in contact with the tissues and body-fluids (bone, mucosa, saliva) and function with the maximum efficiency in harmony and in combination with the existing natural teeth. It becomes obvious that any Dental prosthetic device is a Biomedical device.

A Biomedical product is by definition every instrument, appliance, apparatus, equipment, material or any other kind of product, inclusive of the software that is necessary for its correct function, that is being used alone or in combination with other products, which the manufacturer intends to use on humans for medical purposes, and the main action of which inside or onto the human body cannot be achieved with pharmacological or immunological means, nor through metabolism.

In order for future Dental Technicians to be introduced to the Cognitive Subject of Dental Technology, General knowledge of Inorganic Chemistry, Organic Chemistry, Microbiology, Biology, Biochemistry, Biophysics, Anatomy and Physiology is required. There are also **General Background Courses (GBC),** such as Research Methodology, Biostatistics, Informatics of Biomedical Sciences, Mathematics in Biomedical Sciences and Biomedical English Terminology so that a Dental Technician can follow the evolution in the respective Science field. The New Program of Studies also includes **Specialization** (Division) **Courses(SC),** in order for the Dental Technician to qualify in designing and manufacturing dental prostheses. These have been designed with an appropriate proportion of theoretical and laboratory workload so that both theoretical knowledge and the appropriate necessary skills are optimally acquired.

To serve this purpose, there are **SC** for all kinds of Dental prostheses (Fixed Prosthodontics I&II, Removable Prosthodontics I,II&III, Dental Ceramics I&II, Implant Prosthodontics, Combined Prosthodontics, Orthodontics I&II, Maxillofacial Prosthetics), while newer, contemporary subjects such as Informatics of Dental Technology (the study of CAD/CAM technology), Biomechanics of Dental Technology, Research coordination, Fixed Prosthodontics III, Polymer and Ceramic aesthetic veneering materials) etc. have been included. All these subjects help the student achieve a scientific background so as to keep up with the most contemporary and high-end technologies off the relevant Science field.

The Programs of Studies of Autonomous Dental Technology departments from European Universities have been taken into consideration in order to prepare this New Program of Studies.

7.1.1 Purpose of the Program of Studies

The program of studies is aimed both at delivering theoretical teaching as well as laboratory training of specialized scientific knowledge, so that the graduates of the Dental Technology Division are competent to work:

In the Private Sector:

- Graduates can have the exclusive responsibility to establish and operate Dental Technology laboratories. Moreover, the program is aimed at providing the capability of designing, organizing and managing these laboratories as well as implementing the knowledge and methodologies obtained after the acquisition of 240 credits.
- As employees in Dental Technology laboratories
- As trade partners in domestic Dental Technology companies but also large International companies
- As trainers in domestic Dental Technology companies but also large International companies
- As collaborators in Research programs for companies or private Universities

In the Public Sector:

- In public Dental Prosthetic Care organizations

In Education:

- Based on the level of the Degree acquired (6,7 or 8), in all educational levels
- As academic teachers in domestic or overseas Universities

7.1.2 Studies structure – Dental Technology Division

The **first three (3) semesters** offer both General and Specific Background knowledge and they are in common with the Divisions of "Medical Laboratories Science", "Radiology and Radiotherapy", "Aesthetics and Cosmetic Science", "Dental Technology" and "Optics and Optometry".

The **next five (5) semesters** offer Specialization knowledge and Specific Background knowledge for every Division respectively.

In the **last two (2) semesters**, the Dental Technology Division student, performs Undergraduate Internship of four months duration in total while, in the last semester, the student writes up an undergraduate Thesis. These two possibilities (Undergraduate Internship and Undergraduate Thesis) can be combined with **Compulsory Elective Courses (CE)**. This combination is offered as four different choices.

7.1.3 Undergraduate Thesis (Dissertation)

Writing up an undergraduate Thesis constitutes a hugely important intellectual task for the student of the Dental Technology Division. The student acquires experience in collecting and managing data from various print and electronic sources of information, in writing scientific projects and, finally, the student becomes more informed and up-to-date on the specific topic of the study.

The Undergraduate Thesis topic is given to the student in the last semester of studies, 8th semester, and it is an OC (Optional Compulsory) course for all the five divisions of the Department of Biomedical Sciences:

1. Aesthetics and Cosmetic Science

2. Radiology and Radiotherapy
3. Medical Laboratories Science
4. Dental Technology
5. Optics and Optometry

Aim of conducting an undergraduate Thesis (Dissertation)

The aim of a student study is to look through deeply into the currently acquired knowledge, the meticulous study of a specific scientific problem, the interpretation of a specific phenomenon or situation, or any combination of the above depending on the subject, and the capability of the student in analyzing, composing, and logical processing of data. The most common ways to approach an undergraduate Thesis are: the Literature Review, the Experimental Research Study, the Case Study and the Clinical-Statistical Studies.

The procedure for conducting an Undergraduate Thesis is analytically explained in the relevant Guide which is found in the Departmental website https://bisc.uniwa.gr/diplomatiki-ergasia/.

The assessment of the Undergraduate Thesis is completed after the student has presented the topic to the Undergraduate Thesis Committee (three members of staff) as well as to an audience of other students.

Undergraduate Thesis (Dissertation) Assessment criteria

The Department of Biomedical Sciences introduces the following assessment criteria for Undergraduate Thesiss based on which the Undergraduate Thesis Committee will assign marks to the Undergraduate Thesis.

- Content correctness (60%)
- Referencing sufficiency (15%)
- Presentation (15%)
- Innovative elements and Research prospects (5%)
- Correct use of the Greek language (5%)

7.1.4 Undergraduate Internship

Dental Technology is a combination of Science and Technology. Following graduation, the students will have all the necessary theoretical knowledge and hand skills to meet any potential career choice. Undergraduate Internship for four consecutive months will help towards a speedier incorporation of the graduate in the job market.

During the Undergraduate Internship, the students gradually conceptualize the role which they are asked to fulfil as graduates in implementing the theoretical and practical knowledge acquired during their studies. They familiarise with decision-making, they autonomously fulfil specific duties, they face the ethical and legal restrictions relevant to collaborative work in certain professional spaces and also to the management and running of small or large businesses.

The experience that the students can acquire (in a certified lab) which is relevant to the function of the free market, as well as the professional relationships with their colleagues or the collaborating

dentists, cannot be acquired during their studies. The Undergraduate Internship can be fulfilled in any Dental Technology lab of the private or the public sector that holds the relevant legal permit of operation.

The Undergraduate Internship is fulfilled under the Division's members of staff supervision and it is coordinated from the Undergraduate Internship Committee. The assessment of the Undergraduate Internship is done through participation of all the organizing parts involved. The Undergraduate Internship Committee sets the assessment criteria for this subject.

Scope of the Biomedical Sciences Department graduate, Division of Dental Technology

Upon completion of their studies, the graduates of the Division will have acquired the necessary scientific and technological knowledge, skills and capabilities so that they can become active as the Dental Technicians in charge in sectors of their domain:

- They undertake the responsibility of organizing and operating a Dental Technology lab and be in the position to ensure the quality and certify the appropriateness of the Dental prostheses manufactured
- They choose the appropriate appliances and instruments to equip Dental Laboratories, they take care of their maintenance and implement the recommended hygiene and safety rules
- They are constantly updated on contemporary materials, choosing the appropriate ones based on the expected biological behaviour. They also choose the relevant laboratory method that they will use to form those materials based on the patient case they will work on.
- They man the Dental Laboratory with specialized personnel which they supervise and upon which they assign the relevant tasks according to their speciality.
- They design and manufacture all the types of Dental Prostheses, both fixed and removable, implant retained prostheses, as well as maxillofacial appliances, according to the written instructions of the dentist, always aiming at maintaining or restoring the balance of the stomatognathic system.
- They design and manufacture orthodontic appliances of various types, both intra and extraoral, always according to the instructions given by the dentist
- They participate in work groups with specialist dentists for the design and manufacture of the aforementioned prostheses.
- They conduct studies and participate in research groups
- They can be employed in various levels of Education always according to the legislation in force

7.1.5 Certification of the Dental Technician's profession

The Dental Technician's profession can be practised after a special permit has been granted from the Minister of Health, Welfare and Social Insurance according to the procedures that are defined in Law No 1666/1986 (National Gazette No: 200 A'), as modified by article 24, Law No 3868/2010 (National Gazette No: 129 A') and completed by article 37, Law No 4058/2012 (National Gazette No: 63 A').

Whoever, according to the Law, acquires the professional work permit as a Dental Technician, may also acquire the permit for establishing and operating a Dental Laboratory, according to the operating specifications required by Law.

7.1.6 Professional rights

1. The graduates of the Department of Dental Technology Division, School of Health and Care Professions, Technological Institute of Athens, based on their specialized scientific & technical knowledge, can be employed in the private or the public sector covering all the spectrum of Dental Technology and Orthodontic appliances as well as any prosthetic appliance for the restoration of oral cavity anomalies.
2. In particular, the aforementioned graduates have the right to be employed either as executive members or become self-employed in the following areas and activities:
   i) Manufacturing all kinds of Dental prostheses and Orthodontic devices such as full and partial dentures, inlays, crowns and bridges, precision attachments in removable prosthetic devices, orthodontic devices and prosthetic appliances for the restoration of oral cavity anomalies. All these appliances can be explicitly manufactured in a Dental laboratory based on the oral impressions and the instructions by the Dentist, who can oversee these processes in order to confirm abidance to the instructions given.
   ii) Any other professional activity that may emerge with the evolution of Technology and is evidently covered by the cognitive subject of their speciality.
3. The graduates of the aforementioned Division can be employed in all levels of Education according to the current legislation. They can also be employed as members of research teams in topics of their specialty.
4. The graduates of the aforementioned Division can establish, organize and manage a Dental Laboratory in a responsible manner and always based on the current legislation.
5. The graduates of the aforementioned Division practice their profession within the limits of the above professional rights after the acquisition of a professional practice permit, that can be granted from the relevant services of the Ministry of Health, Care and Social Insurance.

DIVISION OF DENTAL TECHNOLOGY

STUDY PROGRAM– ACADEMIC YEAR 2019-2020

The fourth semester of studies of the Dental Technology Division consists of two Specific Background Courses (SBC) and three Specialization Courses (SC), where the student can acquire 30 credit units. The student attends thirteen (13) hours per semester of theoretical teaching as well as seventeen (17) hours per semester of laboratory teaching in small groups (Dental Morphology, Occlusion and Removable Prosthodontics I).

The fifth semester of studies of the Dental Technology Division consists of one SBC and three SC with which the student acquires thirty (30) credit units. The student attends ten (10) hours per semester of theoretical teaching and twenty (20) hours per semester of laboratory teaching in small groups (Fixed Prosthodontics I, Orthodontics I and Removable Prosthodontics II).

The 6th semester of studies of the Dental Technology Division consists of four (4) SC where the student can acquire thirty (30) credit units. The student attends nine (9) hours per semester of theoretical teaching and twenty-one (21) hours per semester of laboratory teaching in small groups (Fixed Prosthodontics II, Orthodontics II, Dental Ceramics I and Removable Prosthodontics III).

The **7th semester** of studies of the Dental Technology Division consists of four (4) **SC** where the student can acquire 30 credit units. The student attends eleven (11) hours per semester of theoretical teaching and nineteen (19) hours per semester of laboratory teaching in small groups (Fixed prosthodontics III, Dental Ceramics II and Combined Prosthodontics - Precision attachments)

The **last semester (8th)** of studies of the Dental Technology Division consists of five (5) **SC** and three (3) **SBC**.

7.2 Study Program Tables – Division of Dental Technology

ABBREVIATIONS
General Background Course: GBC
Specific Background Course: SBC
Specialization Course: SC
Compulsory Elective: CE
Compulsory (C)

Table 7.1 –Weekly Timetable - 4th Semester

Subject Code	s/n	4th Semester	Theoretical	Lab	Total	Total Workload	ECTS	Subject Category
4011-4012	**1**	DENTAL MORPHOLOGY	3	6	9	270	9	SBC/C
4021	**2**	BIOMATERIALS of DENTAL TECHNOLOGY	2	0	2	90	3	SC/C
4031-4032	**3**	OCCLUSION	2	2	4	150	5	SC/C
4041-4042	**4**	REMOVABLE PROSTHODONTICS I	4	9	13	300	10	SC/C
4051	**5α**	PRINCIPLES of BUSINESS ADMINISTRATION and LABORATORY ORGANIZATION	2	0	2	90	3	SBC/CE
4052	**5β**	PRINCIPLES of MARKETING						
		TOTAL	**13**	**17**	**30**	**900**	**30**	

Table 7.2 – Weekly Timetable - 5th Semester

Subject Code	s/n	5th Semester	Theoretical	Lab	Total	Total Workload	ECTS	Subject Category
5011-5012	**1**	FIXED PROSTHODONTICS I	3	9	12	300	10	SC/C
5021-5022	**2**	ORTHODONTICS I	2	2	4	180	7	SC/C
5031-5032	**3**	REMOVABLE PROSTHODONTICS II	3	9	12	300	10	SC/C
5041	**4**	ORAL and LAB HYGIENE	2	0	2	90	3	SBC/CE
		TOTAL	**10**	**20**	**30**	**900**	**30**	

Table 7.3 – Weekly Timetable - 6th Semester

Subject Code	s/n	6th Semester	Theoretical	Lab	Total	Total Workload	ECTS	Subject Category
6011-6012	**1**	FIXED PROSTHODONTICS II	2	7	9	270	9	SC/C
6021-6022	**2**	ORTHODONTICS II	2	2	4	180	5	SC/C
6031-6032	**3**	DENTAL CERAMICS I	2	7	9	240	9	SC/C
6041-6042	**4**	REMOVABLE PROSTHODONTICS III	3	5	8	210	7	SC/C
		TOTAL	**9**	**21**	**30**	**900**	**30**	

Table 7.4 –Weekly Timetable - 7th Semester

Subject Code	s/n	7th Semester	Theoretical	Lab	Total	Total Workload	ECTS	Subject Category
7011-7012	**1**	DENTAL CERAMICS II	3	6	9	240	8	SC/C
7021-7022	**2**	COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS	3	6	9	240	8	SC/C
7031	**3**	AESTHETICS of PROSTHETIC RESTORATIONS	2	0	2	90	4	SC/C
7041-7042	**4**	FIXED PROSTHODONTICS III	3	7	10	300	10	SC/C
		TOTAL	**11**	**19**	**30**	**870**	**30**	

Table 7.5 – Weekly Timetable - 8th Semester

Subject Code	s/n	8th Semester	Theoretical	Lab	Total	Total Workload	ECTS	Subject Category
8011	**1**	MANAGEMENT of OCCLUSAL DISORDERS	3	0	3	90	3	SC/C
8021-8022	**2**	IMPLANT PROSTHODONTICS	4	6	10	300	10	SBC/C
8031-8032	**3**	DIGITAL DENTAL TECHNOLOGY	3	4	7	180	6	SBC/C
8041	**4α**	POLYMER AESTHETIC VENEERING MATERIALS*	3	0	3	120	4	SC/CE
8042	**4β**	CERAMIC AESTHETIC VENEERING MATERIALS*						
8051-8052	**5α**	MAXILLOFACIAL PROSTHODONTICS*	3	2	5	150	5	SC/CE
8053-8054	**5β**	SPECIALIZED ORTHODONTICS*						
8061	**6α**	RESEARCH ORGANIZATION*	2	0	2	60	2	SBC/C
8062	**6β**	BIOMECHANICS OF DENTAL TECHNOLOGY*						
8071	**7**	UNDERGRADUATE THESIS (DISSERTATION) *				150	5	SC/CE
8082	**8**	UNDERGRADUATE INTERNSHIP*				150	6	SC/CE
		TOTAL	**18**	**12**	**30**	**900**	**30**	

7.3 Subject Options 8th Semester

The final 8th Semester in the Curriculum of Dental Technology includes five (5) Specialisation (division) Courses (SC) and three (3) Specific Background Courses (SBC).

Undergraduate Thesis and Undergraduate Internship are Compulsory Elective Specialisation Courses (CESC).

*FOR THE FULFILMENT OF THE 30 ECTS UNITS OF THIS SEMESTER STUDENTS ARE OFFERED THE FOLLOWING OPTIONS:

1. THREE OPTIONAL COURSES (4α or 4β, **AND** 5α or 5β, **AND** 6α or 6β)
2. UNDERGRADUATE THESIS **AND** UNDERGRADUATE INTERNSHIP
3. ONE OPTIONAL COURSE (5α or 5β) **AND** UNDERGRADUATE INTERNSHIP
4. ONE OPTIONAL SUBJECT 4α or 4β **AND** ONE OPTIONAL SUBJECT 6α or 6β, **AND** UNDERGRADUATE THESIS

OPTION 1. The student selects three (3) Compulsory Elective Courses (two Specialization Courses and one Specific Background Course) leading to a total workload of 330 units and 11 ECTS, not including either Undergraduate Thesis or Undergraduate Internship.

OPTION 2. The student selects Undergraduate Thesis and Undergraduate Internship. Undergraduate Thesis and Undergraduate Internship correspond to a total workload of 300 units and 11 ECTS in total.

OPTION 3. The student selects Undergraduate Internship and one (1) Compulsory Elective Course of a total workload of 300 units and 11 ECTS. Undergraduate Internship corresponds to a total workload of 150 units and 6 ECTS and the Optional Compulsory Course to a total workload of 150 units and 5 ECTS.

OPTION 4. Student selects Undergraduate Thesis and two (2) Compulsory Elective Courses of a total workload of 330 units and 11 ECTS. Undergraduate Thesis corresponds to a total workload of 150 units and the two Compulsory Elective Courses to a total workload of 180 units and 6 ECTS.

ABBREVIATIONS
General Background Course: GBC
Specific Background Course: SBC
Specialization Course: SC
Compulsory Elective: CE
Compulsory (C)

DIVISION OF DENTAL TECHNOLOGY

EQUIVALENTS (4th,5th, 6th,7th,8th SEMESTER)-ACADEMIC YEAR 2019-20*

PROGRAM STUDIES (PS) - DENTAL TECHNOLOGY				
Previous Subject		PS	Current Subject	
Code	Title		Code	Title
	1st Semester		NEW PS(WEBSITE NEW PS)	
N2-1010	PHYSICS		1040 (1041-1042)	BIOPHYSICS
			1041 (1041)	BIOPHYSICS-T
			1042 (1042)	BIOPHYSICS-L
			1061 (1061)	MATHEMATICS IN BIOMEDICAL
N2-1020	CHEMISTRY of DENTAL MATERIALS		1020 (1021-1022)	GENERAL & INORGANIC CHEMISTRY
			1021 (1021)	GENERAL & INORGANIC CHEMISTRY-
			1022 (1022)	GENERAL & INORGANIC CHEMISTRY-
N2-1030	PRINCIPLES of DENTAL TECHNOLOGY		2041 (2041)	INTRODUCTION to BIOMEDICAL
N2-1040	DENTAL MORPHOLOGY		4010OT (4011-4012)	DENTAL MORPHOLOGY
N2-1040-L	DENTAL MORPHOLOGY-L		4012OT (4012)	DENTAL MORPHOLOGY-L
N2-1040-T	DENTAL MORPHOLOGY-T		4011OT (4011)	DENTAL MORPHOLOGY-T
N2-1050	ANATOMY		1010 (1011-1012)	ANATOMY I
			1011 (1011)	ANATOMY I-T
			1012 (1012)	ANATOMY I-L
			2011 (2011)	ANATOMY II

	2nd Semester		EQUIVALENTS	
Previous Subject		P S	Current Subject	
Code	Title		Code	Title
N2-2010	REMOVABLE PROSTHODONTICS I		4040OT (4041-4042)	REMOVABLE PROSTHODONTICS I
N2-2010-E	REMOVABLE PROSTHODONTICS-L		4042OT (4042)	REMOVABLE PROSTHODONTICS I-L
N2-2010-Θ	REMOVABLE PROSTHODONTICS-T		4041OT (4041)	REMOVABLE PROSTHODONTICS I-T
N2-2020	DENTAL BIOMATERIALS I		3070 (3071-3072 7α)	INTRODUCTION to DENTAL TECHNOLOGY BIOMATERIALS
			3071 (3071)	INTRODUCTION to DENTAL TECHNOLOGY BIOMATERIALS-T
			3072 (3072)	INTRODUCTION to DENTAL TECHNOLOGY BIOMATERIALS-L
N2-2030	BIOLOGY		1031 (1031)	CELL BIOLOGY
N2-2040	PHYSIOLOGY		2050 (2051-2052)	PHYSIOLOGY
			2051 (2051)	PHYSIOLOGY-T
			2052 (2052)	PHYSIOLOGY-L
N2-2050	PHYSIOLOGY of STOMATOGNATHIC SYSTEM-OCCLUSION		3051 (3051-5α)	PHYSIOLOGY of STOMATOGNATHIC SYSTEM
			4030OT (4031-4032)	OCCLUSION
			4031OT (4031)	OCCLUSION-T

			4032OT (4032)	OCCLUSION-L

3rd Semester			EQUIVALENTS	
Previous Subject		PS	Current Subject	
Code	Title		Code	Title
N2-3010	REMOVABLE PROSTHODONTICS II		5030OT (5031-5032)	REMOVABLE PROSTHODONTICS II
N2-3010-L	REMOVABLE PROSTHODONTICS II-L		5032OT (5032)	REMOVABLE PROSTHODONTICS II-L
N2-3010-T	REMOVABLE PROSTHODONTICS II-Th		5031OT (5031)	REMOVABLE PROSTHODONTICS II-T
N2-3020	DENTAL BIOMATERIALS II		4021OT (4021)	BIOMATERIALS of DENTAL TECHNOLOGY
N2-3030	ORAL HISTOLOGY		3061 (3061-6α)	ORAL HISTOLOGY and HISTOLOGY OF DENTAL TISSUES
N2-3040	PROFESSIONAL ETHICS		2041 (2041)	INTRODUCTION to BIOMEDICAL SCIENCES
N2-3050	BIOMETRY-BIOSTATISTICS		2060 (2061-2062)	BIOSTATISTICS
			2061 (2061)	BIOSTATISTICS-T
			2062 (2062)	BIOSTATISTICS-L
			1061 (1061)	MATHEMATICS in BIOMEDICAL SCIENCES*
4th Semester			EQUIVALENTS	
N2-4010	FIXED PROSTHODONTICS I		5010OT (5011-5012)	FIXED PROSTHODONTICS I
N2-4010- E	FIXED PROSTHODONTICS I-L		5012OT (5012)	FIXED PROSTHODONTICS I-L
N2-4010-Θ	FIXED PROSTHODONTICS I-Th		5011OT (5011)	FIXED PROSTHODONTICS I-T
N2-4020	PROSTHODONTICS and AESTHETICS		7031OT (7031)	AESTHETICS of PROSTHETIC RESTORATIONS
N2-4030	ORTHODONTICS I		5020OT (5021-5022)	ORTHODONTICS I
N2-4030-E	ORTHODONTICS I-L		5022OT (5022)	ORTHODONTICS I-L
N2-4030-Θ	ORTHODONTICS I-Th		5021OT (5021)	ORTHODONTICS I-T
N2-4040	MICROBIOLOGY of ORAL CAVITY		3041 (3041)	GENERAL MICROBIOLOGY
N2-4050	METHODOLOGY - RESEARCH		3021 (3021)	RESEARCH METHODOLOGY

			8061OT (8061-6α)	RESEARCH ORGANIZATION

5th Semester			EQUIVALENTS	
Previous Subject		PS	Current Subject	
Code	Title		Code	Title
N2-5010	FIXED PROSTHODONTICS II		6010OT (6011-6012)	FIXED PROSTHODONTICS II
N2-5010-E	FIXED PROSTHODONTICS II-L		6012OT (6012)	FIXED PROSTHODONTICS II-L
N2-5010-Θ	FIXED PROSTHODONTICS II-Th		6011OT (6011)	FIXED PROSTHODONTICS II-T
N2-5020	MANAGEMENT of OCCLUSION and DYSFUNCTIONAL DISORDERS OF STOMATOGNATHIC SYSTEM		8011OT (8011)	MANAGEMENT of OCCLUSAL DISORDERS
N2-5030	ORTHODONTICS II		6020OT (6021-6022)	ORTHODONTICS II
N2-5030-E	ORTHODONTICS II-L		6022OT (6022)	ORTHODONTICS II-L
N2-5030-Θ	ORTHODONTICS II-Th		6021OT (6021)	ORTHODONTICS II-T
N2-5040	ORAL and LAB HYGIENE		5041OT (5041)	ORAL and LAB HYGIENE
N2-5050	FIRST AID		3030 (3031-3032)	FIRST AID
			3031 (3031)	FIRST AID-T
			3032 (3032)	FIRST AID-L
N2-5060	PRINCIPLES of BUSINESS ADMINISTRATION and LAB ORGANIZATION		4051OT (4051-5α)	PRINCIPLES of BUSINESS ADMINISTRATION and LABORATORY ORGANIZATION

6th Semester			EQUIVALENTS	
Previous Subject		PS	Current Subject	
Code	Title		Code	Title
N2-6010	DENTAL CERAMICS I		6030OT (6031-6032)	DENTAL CERAMICS I
N2-6010-E	DENTAL CERAMICS I-L		6032OT (6032)	DENTAL CERAMICS I-L
N2-6010-Θ	DENTAL CERAMICS I-Th		6031OT (6031)	DENTAL CERAMICS I-T
N2-6020	MAXILLOFACIAL PROSTHODONTICS		8050OT (8051-8052 5α)	MAXILLOFACIAL PROSTHODONTICS
			8051OT (8051)	MAXILLOFACIAL PROSTHODONTICS-T
			8052OT (8052)	MAXILLOFACIAL PROSTHODONTICS-L
			8062OT (8062 6β)	BIOMECHANICS of DENTAL TECHNOLOGY
N2-6030	IMPLANT PROSTHODONTICS		8020OT (8021-8022)	IMPLANT PROSTHODONTICS
			8021OT (8021)	IMPLANT PROSTHODONTICS-T
			8022OT (8022)	IMPLANT PROSTHODONTICS-L
N2-6040	INFORMATICS in DENTAL TECHNOLOGY		8030OT (8031-8032)	DIGITAL DENTAL TECHNOLOGY
			8031OT (8031)	DIGITAL DENTAL TECHNOLOGY-T
			8032OT (8032)	DIGITAL DENTAL TECHNOLOGY-L
			1061 (1061)	MATHEMATICS IN BIOMEDICAL SCIENCES*
N2-6A50	ENTREPRENEURSHIP		4052OT (4052-5β)	PRINCIPLES of MARKETING
N2-6B50	PRINCIPLES of HEALTH SERVICES ORGANIZATION and MANAGEMENT		4051OT (4051-5α)	PRINCIPLES of BUSINESS ADMINISTRATION and LABORATORY ORGANIZATION

7th Semester			EQUIVALENTS	
Code	**Title**		**Code**	**Title**
N2-7010 N2-7010-E N2-7010-Θ	DENTAL CERAMICS II DENTAL CERAMICS II-L DENTAL CERAMICS II-T		7010OT (7011-7012)	DENTAL CERAMICS II
			7012OT (7012)	DENTAL CERAMICS II-L
			7011OT (7011)	DENTAL CERAMICS II-T
			8042OT (8042-4β)	CERAMIC AESTHETIC VENEERING MATERIALS
N2-7020	REMOVABLE PROSTHODONTICS III		6040OT (6041-6042)	REMOVABLE PROSTHODONTICS III
N2-7020 -E	REMOVABLE PROSTHODONTICS III-L		6042OT (6042)	REMOVABLE PROSTHODONTICS III-L
N2-7020 –Θ	REMOVABLE PROSTHODONTICS III-T		6041OT (6041)	REMOVABLE PROSTHODONTICS III-T
N2-7030 N2-7030-E N2-7030-Θ	COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS-L COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS-T		7020OT (7021-7022)	COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS
			7022OT (7022)	COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS-L
			7021OT (7021)	COMBINED PROSTHODONTICS – PRECISION ATTACHMENTS-T
			7040OT (7041-7042)	FIXED PROSTHODONTICS III
			7041OT (7041)	FIXED PROSTHODONTICS III-T
			7042OT (7042)	FIXED PROSTHODONTICS III-L
N2-7040	ENGLISH for DENTAL TECHNOLOGY		2071 (2071)	BIOMEDICAL ENGLISH TERMINOLOGY
N2-7A50	SOCIOLOGY of HEALTH		1051 (1051)	INFORMATICS in BIOMEDICAL SCIENCES
			4052OT (4052-5β)	PRINCIPLES of MARKETING
N2-7B50	FUNDAMENTALS of MARKETING		1051 (1051)	INFORMATICS in BIOMEDICAL SCIENCES

			4052OT (4052-5β)	PRINCIPLES of MARKETING

8th Semester		PS	EQUIVALENTS	
Code	Title		Code	Title
UNDERGRADUATE THESIS (DISSERTATION)	UNDERGRADUATE THESIS (DISSERTATION)		8071OT (8071)	UNDERGRADUATE THESIS (DISSERTATION)
			8053OT (8053-8054 5β)	SPECIALIZED ORTHODONTICS
			8054OT (8053)	SPECIALIZED ORTHODONTICS-T
			8055OT (8054)	SPECIALIZED ORTHODONTICS-L
UNDERGRADUATE INTERNSHIP	UNDERGRADUATE INTERNSHIP		8082OT (8082)	UNDERGRADUATE INTERNSHIP
			8041OT(8041-4α)	POLYMER AESTHETIC VENEERING MATERIALS
			NEW CURRENT SUBJECTS - NON MACHED	
			2021 (2021)	BIOCHEMISTRY
			2031 (2031)	ORGANIC CHEMISTRY
			3011 (3011)	PHARMACOLOGY

Subject options 8th Semester

The final 8th Semester in the Curriculum of Dental Technology consists of five (5) Specialisation (division) Courses and three (3) Specific Background Courses.

Undergraduate Thesis and Undergraduate Internship are Optional/Compulsory Subjects

* FOR THE FULFILMENT OF THE 30 ECTS UNITS OF THIS SEMESTER STUDENTS ARE OFFERED THE FOLLOWING OPTIONS:

OP 1.: THREE COMPULSORY ELECTIVE COURSES (8041OT or 8042OT, AND 8050OT (T+L) or 8052OT (T+L), AND 8061OT or 8062OT)

OP 2.: UNDERGRADUATE THESIS (8071OT) AND UNDERGRADUATE INTERNSHIP (8082OT)

OP 3.: ONE (1) COMPULSORY ELECTIVE COURSE(8050OT (T+L) or (8053OT (T+L), AND UNDERGRADUATE INTERNSHIP (8082OT)

OP 4.: TWO COMPULSORY ELECTIVE COURSES; OPTIONAL COURSE 1 (8041OT or 8042OT) AND OPTIONAL COURSE 2 (8061OT or 8062OT) AND UNDERGRADUATE THESIS (8082OT)

NOTE: WITH RED INK THE CODES OF THE NEW PROGRAM STUDIES COURSES AS THEY APPEAR AT THE DIGITAL DATA FORM (e-study)

WITH BLACK INK AND IN BRACKETS THE CODES OF NEW SUBJECTS AS THEY APPEAR AT THE DEPARTMENT'S WEBSITE https://bisc.uniwa.gr/courses/undergradute/

* CHANGES IN PROGRAM STUDIES OF ACADEMIC YEAR 2019-20*(General Committee Assembly no. 12/10.09.19)*:The COMMON, Semester A, course "Biomedical English Terminology – Code 1061" is being moved to semester B with code 2071, keeping the same teaching hours and ECTS credits while its place in semester A is taken by the **new subject "Mathematics in Biomedical Sciences"** with the same code 1061, the same teaching hours and the same ECTS credits.
2) For the semester B, COMMON course: «Introduction to Biomedical Sciences-code 2041» the teaching hours and the ECTS credits are reduced from 4 to 2.

8. Study Program of the Division of Optics & Optometry

8.1 General features and descriptive elements of the Academic Curriculum- Optics & Optometry Division

The curriculum content of the Optics and Optometry Division of the Biomedical Sciences Department, covers both the cognitive object of ***Optics*** (Dispensing of spectacle lens prescription, ordering and applying low-vision aids, performing the necessary measurements for ordering and fitting various types of contact lenses) as well as the cognitive subject of ***Optometry*** (optometric testing of spectacles or contact lenses prescription, optometric control of contact lenses fitting, preoperative and postoperative assessment, monitoring of progression and compliance in the treatment of various eye diseases, in accordance with the applicable legislation).

Optics and Optometry's Division mission is to promote the expansion and spread of the Optometric Science knowledge and Dispensing Optics; to provide students with the necessary means to ensure their adequate training for their scientific and professional career and evolution, by offering them sufficient teaching and applied research.

In the context of its mission, the Optics & Optometry Division:

- Monitors European and international developments in the field of Optometric academic education.
- Collaborates with productive units and bodies related to its cognitive subject.
- Uses modern technologies in education as well as distance learning techniques (ongoing education)
- possesses a dedicated Optical Metrology Laboratory and an Optometry Assessment Clinic, where scientific and technological research is conducted.
- promotes students' skills and abilities that will make them competent and competitive in both national and international level.
- is receptive to changes according to the changing educational, economic and social conditions in local, national and international environment, but also to changes required by the transformation and evolution of the profession worldwide.
- takes all appropriate measures to ensure the provision of quality and improved education
- operates a postgraduate MSc program (120 ECTS), while at the same time is open to proposals and discussions regarding the organization of new adjunct programs autonomously or in partnership with local or foreign universities.
- Collaborates with private and public sectors (Municipalities, Prefectures, etc.) but also with intervention bodies (Doctors Without Borders, Associations of the Blind and visually impaired people) providing information, lectures and gratis services for the relief of sufferers or various social groups.

Upon completion of their studies, the graduates of the Optics & Optometry Division, Department of Biomedical Sciences, School of Health Sciences at the University of West Attica, possess the necessary scientific and technological knowledge, as well as the appropriate skills in order to be employed as Opticians and Optometrists in all areas of the Division's scientific area, either as self-employed, or as managers or staff of similar clinics, companies and optical items industries, Organizations and Offices.

In particular, the Optician- Optometrist and Contact Lens Practitioner:

- Carries out, under the supervision of an Ophthalmologist, objective and subjective examinations, with the aim of refractive assessment of the eyes, binocular function testing, color vision and visual fields examination, as well as coarse check of ocular health and integrity.
- May use ophthalmic preparations and eye drops exclusively for diagnostic purposes and first aid.
- Can work in the public sector after adjective vacancy announcements in Hospitals and Health Centers, in municipal clinics, in health insurance institutions, in private centers or medical offices, as a freelancer, as well as in optical stores that meet the personal data security standards and own the necessary equipment.
- Applies modern scientific and technological methods as well as practices in the application and placement of corrective or protective lenses, application and Optometric confirmation of prescription contact lenses as well as in the distribution and marketing of sunglasses and other vision aids.
- Addresses the social and legal obligations of optical companies to clients, ophthalmologists and local or national health agencies.
- Is engaged in research, development and innovation in every part of Optics, Optometry, Contact lenses fitting and vision aids.
- Has the knowledge for the elaboration of scientific studies and the design of innovative products for the optical industry.
- Has skills for collective and teamwork, both in the context of Optics and its applications, as well as in other areas, such as the organization and management of departments and offices of companies importing and distributing of Optical Items.
- Finally, they are engaged in education according to the current legislation.

8.1.1 Undergraduate Internship

The realization of the internship in the profession of Optician- Optometrist, aims to provide students with the opportunity for an experiential learning process. The purpose of the PA is to connect education with the professional environment that students will encounter in the labor market upon successful completion of their studies. It is a compulsory course of the study program of the Department of Optics & Optometry of the Department of Biomedical Sciences and takes place in the 8th semester. It lasts 4 months (5 days 8 hours work).

In more detail, the student of the Department of Optics-Optometry should practice in the following areas in order to:

o Apply modern scientific and technological methods, as well as practices in the application and placement of corrective or protective lenses, application and optometric confirmation of prescription contact lenses as well as in the distribution and marketing of sunglasses and other vision aids.
o Apply modern laboratory techniques in the establishment and operation of an optical store, prescription laboratory and contact lens application area.
o Address the social and legal obligations of optical companies to clients, ophthalmologists and local or national health agencies.

o Get engaged in research, development and innovation in every field of Optics and the application of contact lenses and vision aids.
o Obtain the knowledge to prepare relevant studies and product design of the optical industry.
o Acquire the skills of collective and teamwork, both in the context of Optics and its applications, as well as in other sectors, such as the organization and management of departments and offices of companies importing and distributing Optical Items.

The internship in the field of Optics and Optometry is carried out in the Private and public sector in ophthalmology clinics in private or in ophthalmology departments of public hospitals. In order for the internship to be considered complete, students must cover the full range of the above applications and this will be evaluated by the internship committee of the Department
The selection of students for the internship is done with the criteria:

- 70%: The number of courses completed.
- 30%: The average grade of the completed courses.

The evaluation of the internship is done with the participation of all those involved in its organization. Specifically, the final grade results from the following quotas:

- 40%: from the evaluation of the responsible supervisor of the internship body.
- 40%: from the evaluation of the responsible supervisor faculty member.
- 20%: from the evaluation of the internship committee.

The Undergraduate Internship Committee determines the way of grading the course "Undergraduate Internship" by the supervisors of the institution and the University of West Attica.

8.1.2 Undergraduate Thesis (Dissertation)

The Undergraduate Thesis enables students to gain the experience of research and writing a study on a subject of specialization that may include in-depth bibliographic review or basic research. The Undergraduate Thesis is recommended for students who want to pursue postgraduate studies or research. The evaluation criteria of the Undergraduate Thesis are the following:

1. Correctness and validity of the content of the work (60%)

2. Adequacy of bibliographic reports (20%)

3. Presentation (10%)

4. Innovative data and research perspectives (5%)

5. Correct use of the Greek Language (5%)

8.2 Division course curriculum tables

ABBREVIATIONS

General Background Course: GBC
Specific Background Course: SBC
Specialization Course: SC
Compulsory Elective: CE
Compulsory (C)

DIVISION OF OPTICS & OPTOMETRY

Study Guide of the Optics & Optometry Division (semesters 4th, 5th, 6th, 7th and 8th)

Table 8.1 – 4th Semester study guide

Course code	Order No	4th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
4011 - 4012	**1**	OPTICAL & OPTOMETRIC INSTRUMENTS	4	2	6	180	7	SBC/C
4021	**2**	EYE DISEASES	3	0	3	90	4	SC/C
4031-4032	**3**	OPHTHALMIC LENSES DISPENSING I	4	2	6	180	7	SC/C
4041	**4**	INTRODUCTION TO OPTOMETRY	3	0	3	90	4	SC/C
4051	**5**	NEUROPHYSIOLOGY OF THE EYE	3	0	3	90	4	SC/C
4061	**6**	SYSTEMIC DISEASES & THE EYE	3	0	3	90	4	SBC/C
		TOTAL	**20**	**4**	**24**	**720**	**30**	

Table 8.2 – 5th Semester study guide

Course code	Order No	5th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
5010	**1**	VISUAL OPTICS	4	0	4	120	6	SC/C
5021	**2**	BINOCULAR VISION	3	0	3	90	4	SC/C
5031	**3**	OCULAR PHARMACOLOGY	3	0	2	60	3	SC/C
5041-5042	**4**	OPHTHALMIC LENSES DISPENSING II	2	2	6	180	7	SC/C
5051-5052	**5**	BASIC OPTOMETRY	4	2	6	180	7	SC/C
5061	**6**	SAFETY & HYGIENE AT WORK FOR THE OPTICIAN – OPTOMETRIST	3	0	3	90	3	SBC/C
		TOTAL	**20**	**4**	**24**	**750**	**30**	

Table 8.3 – 6th Semester study guide

Course code	Order No	6th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
6011-6012	**1**	CLINICAL OPTOMETRY	4	2	6	180	7	SC/C
6021	**2**	GLAUCOMA & PERIMETRY	3	0	3	90	5	SC/C
6031-6032	**3**	CONTACT LENSES I	4	2	6	180	7	SC/C
6041	**4**	LASER APPLICATIONS IN OPTOMETRY	3	0	3	90	4	SC/C
6051-6052	**5**	ORTHOPTICS	4	2	6	180	7	SC/C
		TOTAL	**18**	**6**	**24**	**720**	**30**	

Table 8.4 – 7th Semester study guide

Course code	Order No	7th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
7011-7012	**1**	SPECIAL OPTOMETRIC INVESTIGATIVE	3	2	5	150	6	SC/C
7021-7022	**2**	CONTACT LENSES II	4	2	6	180	7	SC/C
7031-7032	**3**	ENVIRONMENTAL ILLUMINATION & VISION	3	1	4	120	5	SC/C
7041-7042	**4**	LOW VISION AIDS	2	2	4	120	5	SC/C
7051	**5**	ETHICS FOR THE OPTICIAN-OPTOMETRIST	2	0	2	60	3	SBC/C
7061	**6**	NEW TECHNOLOGIES IN OPTOMETRY	3	0	3	90	4	SBC/C
		TOTAL	**17**	**7**	**24**	**720**	**30**	

Table 8.5 – 8th Semester study guide

Course code	Order No	8th Semester	Theoretical courses (hours/week)	Laboratory courses (hours/week)	Total hours per week	Course working load	ECTS credits	Course type
8011	**1**	UNDERGRADUATE THESIS[1]	6	0	6	180	8	SC/C
8021	**2**	UNDERGRADUATE INTERNSHIP [2]	0	0	0	240	10	SC/C
8031	**3**	VISION PROBLEMS IN THE ELDERLY	4	0	4	150	6	SBC/C
8041	**4**	PREOPERATIVE ASSESSMENT	4	0	4	150	6	SBC/C
8012	**5**	VISION PSYCHOLOGY	3	0	3	90	4	SBC/CE
8013	**6**	COMMUNICATION SKILLS	3	0	3	90	4	GBC/CE
8022	**7**	MARKETING	3	0	3	90	4	GBC/CE
8023	**8**	ACCOUNTING & INVOICING	3	0	3	90	4	GBC/CE
8024	**9**	COMMERCIAL & LABOR LAW	2	0	2	60	2	GBC/CE
		TOTAL	**14**	**0**	**14**	**720**	**30**	

Course Options for 8th semester

1.Undergraduate Thesis (Dissertation) can be replaced with:

a) 8012 – VISION PSYCHOLOGY

b) 8013 – COMMUNICATION SKILLS

2. Undergraduate Internship can be replaced with:

a. 8022- MARKETING

b. 8023 – ACCOUNTING & INVOICING

c. 8024 – COMMERCIAL & LABOR LAW

Undergraduate Internship will be for 4 months, full-time, 40hours a week

Abbreviatons

General Background Course: GBC

Specific Background Course: SBC

Specialization Course: SC

Compulsory Elective: CE

Compulsory (C)

8.3 Course Options for 8th semester

OPTION 1. The student chooses Undergraduate Thesis and Undergraduate Internship. Undergraduate Internship and Undergraduate Thesis correspond to four hundred and twenty (420) workload units or eighteen (18 ECTS) credit units in total.

OPTION 2. The student chooses Undergraduate Internship and two courses (2) (1 Specialization Background + 1 General Background with a total workload of four hundred and twenty units (420) and ten credit (18) credits (ECTS). The Undergraduate internship corresponds to two hundred forty workload credits (240) and ten (10) credits and elective courses with a workload of one hundred and eighty (180) credits and eight (8) credits (ECTS).

OPTION 3. The student chooses Undergraduate Thesis and three (3) compulsory elective courses with a total workload of four hundred and twenty credits (420) and eighteen credit (18) credits (ECTS). The undergraduate Thesis corresponds to one hundred and eighty workload units (180) eight credits (8) (ECTS) and the 3 optional courses (General Background Courses) with a workload of one hundred and eighty credits (240) and six (10) credits (ECTS) .

OPTION 4. The student chooses five compulsory elective Courses (5 courses (1 Specific Background course + 4 General Background course) with a total workload of four hundred and twenty credits (420) and eighteen credit (18) credits (ECTS), in which undergraduate Internship and undergraduate Thesis are not included.

In order to obtain the degree, successful attendance and examination in a total of 47 to 50 courses is required, depending on whether the preparation of the Undergraduate Thesis and / or the realization of an Undergraduate Internship will be selected. Specifically, 45 compulsory courses distributed as follows [6 1st Semester., 7 2nd Semester, 4 + 3 compulsory elective courses (all in the 3rd Semester) 6 in 4rd Semester, 6 in 5rd Semester, 5 in 6rd Semester, 6 in 7rd Semester, and 7 in 8rd Semester of which 2 to 5 optional courses based on the following table.

	Course	
1st Option	Undergraduate Thesis	1
	Undergraduate Internship	1
	Compulsory Elective course	0
	TOTAL	**2**
2nd Option	Undergraduate Thesis	0
	Undergraduate Internship	1
	Compulsory Elective course	2
	TOTAL	**3**
3rd Option	Undergraduate Thesis	1
	Undergraduate Internship	0
	Compulsory Elective course	3
	TOTAL	**4**
4th Option	Undergraduate Thesis	0
	Undergraduate Internship	0
	Compulsory Elective course	5
	TOTAL	**5**

EQUIVALENTS (1st, 2nd, 3rd, 4th,5th, 6th,7th,8th SEMESTER) - ACADEMIC YEAR 2019-20

Optics & Optometry Division (OO)

	OLD COURSE		NEW COURSE		
	1ST SEMESTER				
COURSE CODE	**TITLE**	**COURSE CODE**	**TITLE**		
N2-1011	MATHEMATICS IN OPTOMETRY	2061-2062	**BIOSTATISTICS**	3021	**RESEARCH METHODOLOGY**
		1061	**MATHEMATICS FOR BIOMEDICAL SCIENCES**		
N2-1012	GEOMETRICAL OPTICS	3073-3074	**GEOMETRICAL & PHYSICAL OPTICS**		
N2-1013	PHYSIOLOGY I	1031	**CELL BIOLOGY**		
N2-1016	HISTORY OF GLASS	1021-1022	**GENERAL & INORGANIC CHEMISTRY**		
N2-1014	SPECIAL CHEMICAL TOPICS	2021	**BIOCHEMISTRY**	2031	**ORGANIC CHEMISTRY**
N2-1015	GENERAL ANATOMY	1011-1012	**ANATOMY I**		
	2nd SEMESTER				
COURSE CODE	**TITLE**	**COURSE CODE**	**TITLE**		
N2-2011	SPECIFIC ANATOMY	2011	**ANATOMY II**		
N2-2016	GENERAL PATHOLOGY	4061	**SYSTEMIC DISEASES & THE EYE**		

N2-2013	PHYSICAL OPTICS	1041-1042	**BIOPHYSICS**		
N2-2012	EYE MICROBIOLOGY	3041	**GENERAL MICROBIOLOGY**	3011	**PHARMACOLOGY**
N2-2015	OPHTHALMIC LENS OPTICAL MATERIALS	3062	**OPTICAL MATERIALS OF OPHTHALMIC LENSES & HISTORY OF GLASS**		
N2-2014	PHYSIOLOGY II	2051-2052	**PHYSIOLOGY**		
	3rd Semester				
COURSE CODE	**TITLE**	**COURSE CODE**	**TITLE**		
N2-3015	ENGLISH OPTOMETRIC TERMINOLOGY	1061	**BIOMEDICAL ENGLISH TERMINOLOGY**		
N2-3011	OPTICAL INSTRUMENTS	4011 - 4012	**OPTICAL & OPTOMETRIC INSTRUMENTS**		
N2-3012	ANATOMY OF THE EYE	3052	**ANATOMY OF THE EYE**		
N2-3013	EYE PHYSIOLOGY	3031-3032	**FIRST AID**		
N2-3014	TECHNOLOGY OF OPHTHALMIC LENS I	4031-4032	**OPHTHALMIC LENS I**		
	4th Semester				
COURSE	**TITLE**	**COURSE**	**TITLE**		

CODE		CODE			
N2-4014	NEUROPHYSIOLOGY OF THE EYE	4051	**NEUROPHYSIOLOGY OF THE EYE**		
N2-4012	VISUAL OPTICS	5011-5012	**VISUAL OPTICS**		
N2-4013	EYE DISEASES	4021	**EYE DISEASES**		
N2-4011	BUSINESS ORGANIZATION-MANAGEMENT	8013	**COMMUNICATION SKILLS**		
N2-4015	TECHNOLOGY OF OPHTHALMIC LENS II	4031-4032	**OPHTHALMIC LENS I**		
N2-4016	CLINICAL AND OPHTHALMIC REFRACTION	4041	**INTRODUCTION TO OPTOMETRY**		
	5th Semester				
COURSE CODE	**TITLE**	**COURSE CODE**	**TITLE**		
N2-5011	ETHICS FOR THE OPTICIAN-OPTOMETRIST	7051	**ETHICS FOR THE OPTICIAN-OPTOMETRIST**		
N2-5012	BASIC OPTOMETRY	5051-5052	**BASIC OPTOMETRY**		
N2-5013	OCULAR PHARMACOLOGY	5031	**OCULAR PHARMACOLOGY**		
N2-5014	COMPUTER APPLICATIONS IN OPTOMETRY	1051	**BIOINFORMATICS**		
N2-5015	TECHNOLOGY OF OPHTHALMIC LENS III	5041-5042	**OPHTHALMIC LENS II**		
N2-9011	ACCOUNTING & INVOICING	8023	**ACCOUNTING & INVOICING**		
N2-9012	COMMERCIAL & LABOR LAW	8024	**COMMERCIAL & LABOR LAW**		
	6th Semester				

COURSE CODE	TITLE	COURSE CODE	TITLE		
N2-6011	CLINICAL OPTOMETRY	6011-6012	**CLINICAL OPTOMETRY**		
N2-6012	BINOCULAR VISION-ORTHOPTICS	5021	**BINOCULAR VISION**	6051-6052	**ORTHOPTICS**
N2-6013	CONTACT LENSES I	6031-6032	**CONTACT LENSES I**		
N2-6014	LOW VISION AIDS	7041	**LOW VISION AIDS**		
N2-6015	MONITORING GLAUCOMA	6021	**GLAUCOMA & PERIMETRY**		
N2-9013	SAFETY & HYGIENE AT WORK	5061	**SAFETY & HYGIENE AT WORK FOR THE OPTICIAN - OPTOMETRIST**		
N2-9014	LASER APPLICATIONS IN OPTOMETRY	6041	**LASER APPLICATIONS IN OPTOMETRY**		
	7th Semester				
COURSE CODE	**TITLE**	**COURSE CODE**	**TITLE**		
N2-7011	SPECIAL OPTOMETRIC INVESTIGATIVE TECHNIQUES	7011-7012	**SPECIAL OPTOMETRIC INVESTIGATIVE TECHNIQUES**		
N2-7012	PEDIATRIC OPTOMETRY	8041	**PREOPERATIVE ASSESSMENT**		
N2-7013	CLINICAL PRACTICE OF CONTACT LENSES	7021-7022	**CONTACT LENSES II**		
N2-7014	ERGONOMY AND ENVIRONMENTAL ILLUMINATION	7031	**ENVIRONMENTAL ILLUMINATION & VISION**		
N2-9015	SALE TECHNIQUES-MARKETING	8022	**MARKETING**	8013	**COMMUNICATION SKILLS**

N2-9016	VISION PSYCHOLOGY	8012	**VISION PSYCHOLOGY**		
	8th Semester				
COURSE CODE	**TITLE**	**COURSE CODE**	**TITLE**		
N2-8001	UNDERGRADUATE INTERNSHIP	8021	**UNDERGRADUATE INTERNSHIP**		
N2-8032	UNDERGRADUATE THESIS (DISSERTATION)	8011	**UNDERGRADUATE THESIS (DISSERTATION)**		
	NEW COURSES UNIVERSITY OF WEST ATTICA				
	2041 INTRODUCTION TO BIOMEDICAL SCIENCES				
	7061 NEW TECHNOLOGIES IN OPTOMETRY				
	8031 VISION PROBLEMS IN THE ELDERLY				

The above mentioned equivalents refer to students intending to obtain T.E.I. degree or those having completed study duration of 13 or more semesters at the winter semester of the academic year 2018-19.

9. Annex I – Courses Outline of Common Semesters

9.1. 1ST Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**1011-1012**	**COURSE SEMESTER**	**1st**
COURSE TITLE	**ANATOMY I**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**7**
Laboratory	**2**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**General Background (GB)**
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/VIM101/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

Theoretical Section

The main scope of this course is the study of the topography, morphology and the rough structure of tissues, organs and systems of human body. The aim of the course is the gain of knowledge of the anatomic structure of human body and the familiarity of the students with the anatomic sites which constitute the human body.

Laboratory Section

The laboratory section of the course completes the theoretical section and helps students to recognize the morphology of the anatomic regions and organs of human body.
The student after the ending of the lesson would be able to:

- Recognise and describe the anatomic parts of the musculoskeletal, respiratory and cardiovascular systems and
- Be familiar and aware of the anatomic parts of musculoskeletal and the organs of respiratory and cardiovascular system of the human body.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

Production of new research ideas	…….

- Working independently
- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

3. SYLLABUS

The course of Anatomy for educational and learning purposes is divided into two inter dependent modules:

- **Anatomy I** comprising a well-defined description of the musculoskeletal system and a detailed description of the cardiovascular and respiratory system and

- **Anatomy II** contains a detailed description of other organic systems including endocrine system, nervous system, and the sensory organs.

Analytical description of the human musculoskeletal system and respiratory and cardiovascular system.

1. **Introduction to Human Anatomy**. Cell, tissues, organs, organic systems.
2. **Skeleton of the skull.** Bones of cerebral and facial (organic) skull. Cranial fossae. Paranasal sinuses.

3. **Skeleton of vertebral column.** Cervical, thoracic, lumbar vertebrae. Common and particular characteristics. Sacrum-coccyx. Analytical description.

4. **Skeleton of thorax-Skeleton of pelvis.** Analytical description of the bones which form the thoracic and pelvic cavity. Not-genuine and genuine ribs. Anonymous bone.

5. **Skeleton of the upper extremities.** Scapula, humerus, radius, ulna, upper hand. Analytical description.

6. **Skeleton of the lower extremities**. Analytical description. Femur, patella, tibia, fibula, upper foot.

7. **Types of joints** (diarthrosis-synarthrosis) and ligaments of the human skeleton.- Ligaments of the basic joints (head, shoulder, knee, hip).

8. **Muscles of the skull, neck, thorax, abdomen and dorsum**. Origin – insertion – neurosis – movement. Basic knowledge of the major muscles (e.g. masseters, mimics, major and auxiliary respiratory muscles, abdominal, scapulodorsal, pleurodorsal muscles).

9. **Muscles of pelvis, perineum, upper and lower extremities**. Origin – insertion – neurosis – movement. Basic knowledge of the major muscles (e.g., deltoides, humeral muscles, femoral muscles, gastrocnemius, gluteal muscles).

10. **Respiratory System**. I. **Upper.** Organs of the upper respiratory system. Description of the nasal cavity, pharynx (parts), larynx, and trachea (parts of each organ, segments, ligaments, cartilages, vasculature, neurosis, muscles groups).
11. **Respiratory System**. **II. Lower**. Description of the bronchial tree and lungs (hilus, lung lobes, ultimate

bronchioli, alveoli, pleura – pleural cavity)

12. **Cardiovascular System. I. Heart.** Analytical description of the heart, cardiac valves, cardiac parts, cardiac tunicae, coronary vessels. Small (Pneumonic) and large circulation.

13. **Cardiovascular System. II. Vessels.** Structure of arteries, veins, and capillaries. Lymphatic System, lymph vessels. The main arteries and veins.

Laboratory/Preparatory skills

The **laboratory exercises** and **practice** take place in the laboratory of Anatomy-Histopathology supplied with the necessary muscle practice models, skeletons, practice models of the human organs and with numerous illustrated maps of Anatomy.

The **laboratory part** of the course includes demonstration of the musculoskeletal system, upon human skeletal and musculoskeletal models, as well as the demonstration of the basic anatomic parts of the respiratory and cardiovascular system and their organs included.

1. Introduction-Demonstration of the practice models of the laboratory of Anatomy (skeleton, muscle torso, human torso with assembled organs, the organ of audition (ear), the organ of vision (eye), the skin, mandible, brain). Guidance of the students into the laboratory place and to the knowhow of performing the laboratory exercises
2. Demonstration of the bones of the skull (cerebral-facial). Demonstration of the anterior cerebral fossa, median and posterior fossa and the bones which are forming them, cranial dome cranial suture. Demonstration of the basic bone points of each cranial bone separately. Demonstration of the bones of thoracic cavity, vertebral column (Ce1-Ce7, Th1-Th12, Lu1-Lu5, sacrum bone, coccyx). Demonstration of the communal characteristics of all vertebras and also of the particular ones of each spinal series. Demonstration of the 12 pairs of thoracic ribs, separation of them in genuine and non-genuine, demonstration of sternum and its bone parts.
3. Demonstration of the bones of the scapular zone, arm and forearm (scapula, humerus, ulna, radius), hand (carpal and metacarpal bones, bones of digits (phalangeal bones). Demonstration of the basic bone points separately of the above anatomic regions.
4. Demonstration of pelvic bones (iliac, sciatic, pubic), bones of the thigh (femoral, patella), bones of tibia (tibia, fibula), and foot (tarsal and metatarsal bones, phalangeal bones). Demonstration of the basic bone parts separately of each anatomic region.
5. Introduction to Arthrology. Demonstration of all skeletal joints and separation in diarthrosis and synarthrosis. Demonstration of individual categories of synarthrosis (syndesmosis-sychondrosis-synosteosis) and diarthrosis (with one, two or three axons of mobility and without mobility axon (amphiarthrosis or flattened arthrosis).
6. Introduction to Myologia. Demonstration of the muscles of facial-cervical region. Demonstration of their origin and insertion upon the musculoskeletal torso.
7. Demonstration of thoracic-dorsal-abdomen muscles. Demonstration of the origin and insertion of the basic muscles of the above region upon the musculoskeletal torso.
8. Demonstration of the muscles of scapular region-arm-forearm and hand. Demonstration of the origin and insertion of the basic muscles of the above region upon the musculoskeletal torso.
9. Demonstration of pelvic-femoral-tibia and foot muscles. Demonstration of the origin and insertion of

the basic muscles of the above region upon the musculoskeletal torso.

10. Demonstration of heart with the great vessels upon heart's model practice. Demonstration of cardiac cavities, valves, tunicae.

11. Demonstration of coronary arteries, basic cerebral vessels, large cervical vessels, basic vessels of thorax, abdomen, upper and lower extremities.

12. Demonstration of the organs of the respiratory system (pharynx, larynx, trachea, bronchus, lungs). Demonstration of the basic anatomic elements of the right and left lung and pleura. Placement of the lungs into thoracic cavity.

13. Laboratory examinations of the semester. Oral or writing type examination according to the professor of the academic course judgement.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face laboratory of Anatomy-Pathologoanatomy
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of I.C.T. in Teaching for the slide show screen and course presentation and use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	***Activity*** — ***Semester workload*** Lectures. Contributions and Lectures with the use of audiovisual instruments. Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), anatomic images, questionnaires, informations for the observation of congresses related to the teaching lesson of the academic course, etc. — 130 Laboratory Exercise, Field Exercise, in small groups of 20-25 students. — 50 Course total — ***180***
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure*	**Theory** Writing Final Examination (100%) which includes:

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	-Multiple choice questionnaires - Short answer questions - Open-ended questions **Laboratory** **1.** Oral/ Writing final Examination with multiple choice questionnaires **2.** Essay/report for the laboratory part (optional)

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Moore K.L. (2012) Clinical Anatomy, 2nd edt, BrokenHill Publ. Ltd, Cyprus.
2. Kammas Antony. (2006) Lessons of Anatomy, 1st edt, Athens, Greece.
3. Jacob S. (2009) Human Anatomy, Scientific Publ. Parisianou. Athens.
4. Hansen J.T., LambertD.R. (2011) Netter's Anatomy I: Basic Clinical Anatomy Broken Hill Publ. Ltd, Cyprus.
5. SnellR. (2009) Clinical Anatomy. Medical Publications Litsas, Athens, Greece.
6. Faiz R., Moffat D. (2006) Anatomy at a Glance. 1th edition, Parisianos S.A., Athens, Greece.
7. Putz R. and Pabst. Sobotta R. (2006) Atlas of Human Anatomy, 2 Volume Set, 14th edition, Urban & Fisher, München, Germany.
8. Putz R. and Pabst. (2010). Sobotta R. Atlas of Human Anatomy, 22th edition, Parisianos. Athens
9. Rohen, JohannesW. (2006) Colored Atlas of Humana Anatomy, Medical Publications P.C. Paschalides, Athens, Greece
10. Drake, RichardL. (2006) Gray's Anatomy, Medical Publications P.C. Paschalides, Athens, Greece
11. G. Agur A. (2010). Grant's Anatomy, 1st edition, BROKEN HILL PUBLISHERS LTD, Cyprus
12. Gilroy A.A. (2011). Promitheas, Basic Descriptive Anatomy D:. Basic Principles of Descriptive Anatomy, 1st edition, BROKEN HILL PUBLISHERS LTD, Cyprus
13. Paraskevas K. G. (2008). Human Anatomy.1st edition, University Studio Press, S.A., Thessaloniki
14. F. Netter (2016): Atlas of Human Anatomy, 6th English edition, 3rd Greek edition, Broken Hills Publishers, Nicosia
15. Marieb, Wilhelm, Mallatt (2018). Anatomy. Lagos Medical Publications, Athens, Greece

Related academic journals:

1. Clinical Anatomy, ISSN 08973906, USA
2. Anatomical Science International, ISSN 14476959, UK
3. Journal of Anatomy, ISSN 14697580, UK
4. Artery Research, ISSN 18729312, Netherlands

5. European Journal of Anatomy, ISSN 11364890, Spain
6. Annals of Anatomy, ISSN 09409602, Germany
7. Anatomy Research International, ISSN 20902743, Hindawi Publishing Coorporation, UK
8. Advances in Anatomy, ISSN 23566558, Hindawi Publishing Coorporation, UK

COURSE OUTLINE

1 GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION			
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	1021-1022	**SEMESTER**	1ST
COURSE TITLE	GENERAL AND INORGANIC CHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	7
LABORATORY EXERCISES	2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	GENERAL BACKGROUND/ COMPULSORY
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	UNIWA Open eClass | Γενική και Ανόργανη Χημεία (Θ) UNIWA Open eClass | Γενική και Ανόργανη Χημεία (Ε)

2. LEARNING OUTCOMES

Learning outcomes *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.* *Consult Appendix A* • *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* • *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* • *Guidelines for writing Learning Outcomes*
The students, upon successful completion of the course, should be able to: • correlate the wavelength with the frequency of light, calculate energy of a photon, determine the wavelength or frequency of a transition for the atom of H, apply the equation de Broglie, apply the rules for quantum numbers. • apply Pauli's principle, determine the structure of an atom by applying the Aufbau principle or by the period number and the group number, apply the Hund's rule. • identify chemicals that are acids or bases, according to Brønsted-Lowry or Lewis theory, predict whether an acid-base reaction favors the reactants or products, calculate H_3O+ and

OH–concentrations of a strong acid or base solution.

- define basic concepts such as solution and its characteristics, ways of expression of concentration (molarity, molality, formality, % by weight, etc.) and performs calculations to dilute, concentrate or mix solutions.
- apply relationships, that connect molecule and ion concentrations to weak acid and base solutions.
- perform the relevant calculations for the preparation of buffer solutions.
- know the factors that affect the rate of chemicals reactions.
- know the basic concepts of Thermodynamics and Thermochemistry and characterize a reaction as exothermic or endothermic, thermodynamically / entropically favored / unfavorable.
- define basic concepts such as oxidation and reduction and understands the operation of galvanic and electrolytic cells.
- describe all the safety rules in a chemical laboratory and recognize good laboratory practices.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Students, upon successful completion of the course, will:

- achieve competence in the use of modern chemical terms and names, resulting in the possibility of unhindered understanding of relevant scientific and technological developments.
- have acquired experimental and analytical skills.
- have the ability to combine theoretical knowledge for the comprehension and interpretation of the laboratory results, as well as for dealing with practical problems.
- have developed critical thinking and teamwork.

3. SYLLABUS

THEORETICAL PART

1. Atomic structure

Atoms, Molecules and Ions (the atomic theory of matter, the nucleus of the atom, electrons, atomic masses, the concept of mole and the Avogadro number) - Electronic configuration (Electromagnetic radiation, atomic spectra, introduction to quantum theory- Bohr's atomic model- Wave / particle dualism - The Uncertainty Principle- Quantum numbers and atomic orbitals - Multi-electronic atoms - Electronic devices and periodic table).

2. Periodic Table and Periodic Properties of Elements.

The Modern Periodic Table - Metals, non-metals and their ions – The atom and ion sizes- Ionization energy and electronic affinity - Magnetic properties - Periodicity in the properties of elements – Biological importance of certain elements.

3. Chemical Bonds.

The ionic bond- The covalent bond- Polar covalent bonds and electronegativity- Intermolecular forces- Van der Waals forces- Hydrogen Bond.

4. Solutions.

Solubility- Ways of expressing concentration- Relationships between expressions of Concentration - Dilution and mixing of solutions.

5. Chemical Equilibrium.

Equilibrium in Chemical Reactions- Homogeneous and Heterogeneous Reactions - Law of Mass Action- Direction and Stability of Chemical Equilibrium- Factors Affecting the Direction of Chemical Equilibrium.

6. Chemical Kinetics.

Reaction rate- Reaction rate equation - Factors affecting the rate and rate constant - Reaction order.

7. Chemistry of aqueous solutions

Acids and bases (Arrhenius theory, Brönsted-Lowry theory, Lewis theory, strong and weak acids and bases). Ionic equilibria in aqueous solutions (ionization of weak monoprotic acids and bases, ionization of water and pH, indicators, salt hydrolysis, acid-base titrations, buffer solutions, Henderson-Hasselbalch equation, ionization of polyprotic acids).

8. Thermochemistry.

Principles of Thermochemistry. Gibbs Free energy (G) - Enthalpy (H) - Entropy (S). The equation $\Delta G = \Delta H - T\Delta S$ - Exothermic / endothermic reaction - Formation enthalpies of bonds (bond strengths) - Calculation of ΔH of reactions- Thermodynamically / entropically favored / unfavorable reaction.

9. Oxidation- Reduction.

Oxidation / Reduction- Oxidizing and reducing agents -Oxidation number- Balancing of oxidation / reduction half-reactions and redox reactions- Electrochemical series, Galvanic cells, Electrolytic cells.

10. Colligative properties of solutions.

Ideal and non-ideal solutions - Raoult's law- Reduction of vapor pressure of the solvent- Elevation of the boiling point- Lowering of the freezing point, Osmosis, osmotic pressure- Operation of artificial kidney unit.

LABORATORY PART

- Chemical laboratory safety rules- Chemical laboratory instruments and operations.

- Preparation of solutions.
- Measurement of pH of solutions.
- Study of buffer solutions.
- Volumetric analysis- Acid-based titrations
- Chemical Kinetics
- Potentiometry
- Complexiметric titrations
- Redox titrations.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of ICT in teaching and laboratory practice. • Use of the e-mail and the course website for communication and notification of students. • Use the e-class for posting and circulation of scientific articles, instructions, lectures, useful links.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity*** — ***Semester workload*** LECTURES — 120 LABORATORY PRACTICE — 60 Course total — *180*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	THEORETICAL PART Written final exam (100%) that includes: • Multiple Choice Questions • Short Answer Questions LABORATORY PART • Laboratory work and an essay/report in each laboratory module • Written final exam that includes multiple choice and short answer questions

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- General Chemistry, Darrell D. Ebbing & Steven D. Gammon, Houghton Mifflin College Div 2008 (9th Edition)
- General Chemistry, Linus Pauling, Dover Publication, Inc., New York
- http://chemwiki.ucdavis.edu/Analytical_Chemistry
- http://alpha.chem.umb.edu/chemistry/ch370/CH370_Lectures/lectures.html
- http://www.chemie-biologie.uni-siegen.de/ac/lehre/lecture1.pdf
- http://www.lasalle.edu/~prushan/advanced%20inorg%20chem%20page.htm
- http://depts.washington.edu/chemcrs/bulkdisk/chem152B_win05/handout_Lecture_0.pdf
- http://en.wikibooks.org/wiki/General_Chemistry

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**1031**	**SEMESTER**	**1st**
COURSE TITLE	**Cell Biology**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		**3**	**4**
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Objectives and expected learning outcomes:

Upon completion of the courses students will be able to:
• know the meaning of "Cell" and understand basic cell functions
• acquire basic knowledge of prokaryotic and eukaryotic cells composition, structure and function
• understand the role of biological macromolecules, cellular homeostasis and communication

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations
Decision-making

Working independently
Team work

Working in an international environment Working in an interdisciplinary environment
Production of new research ideas

Project planning and management
Respect for difference and multiculturalism Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

Search, analyze and synthesize data and information, being able to use the necessary technologies

-Adaptation to new situations

-Autonomous work

-Teamwork

-Working in an interdisciplinary environment

3. SYLLABUS

Theory

Introduction to Cell Biology: Building Stones - Cellular Organization: Organisms' origin and evolution. Building blocks - from biomolecules to cells. Bonds of building blocks and biomolecules. Historical background of cell Biology. Role of Cell Biology in Life Sciences

2. Cellular organization: Cellular theory, the concept of cell, prokaryotic and eukaryotic cell organization and structure. Structure of chromosomes – genes organization.
3. Biological micromolecules and macromolecules (Nucleic acids, proteins, carbohydrates, lipids)
4. Flow of genetic information: Levels of DNA organization: Coding, storage —packaging and decoding of genetic information. Nucleus, Chromosomal components. Nuclear envelop, cytoskeleton and nuclear pores. Transcription - Translation, Protein synthesis. The prokaryotic ribosome. The eukaryotic ribosome. Mechanism of protein synthesis. Simultaneous mRNA translation from multiple ribosomes.
5. Cellular system organization and function: cell structure and function dynamics. Structure and function of representative cell types.
6. Structure and function of biological membranes and separator bilayers: Biological membrane components. Membrane liquidity and regulation of liquidity in organisms. Special methodology. Cell membrane properties. Membrane models of structure and operation. Specialized membrane systems.
7. Structure and function of cellular organelles: Cellular organelles for energy production and conversion. Mitochondria and Chloroplasts.
8. Mitochondria morphology, composition and function: Relation of structure and operation. Chloroplasts morphology, composition and function. Distribution and origin of their components. Semi-autonomy of structure and operation.
9. Organelles for biomolecules conversion and degradation - Other organelles and cell structures: Peroxysomes and Lysosomes. Peroxisomes morphology and function.
10. Lysosomes morphology and function. Involvement of lysosomes in the process of cytophagy. Lysosomes contribution to cellular function. Cellular Fibrils – Cytoskeleton.
11. Hyper molecular structures: Viruses-phages. Composition of macromolecules,

supramolecular structures, viruses and phages. Self-assembly of proteins. Self-assembly of viruses and phages. The lytic and lysigonic cycle of bacteriophages.

12. Cellular Communication and Connection - Extracellular Substances: Morphological expression of communication: Cellular connections. Communication links. Role of receptors and intracellular signaling pathways. Cell binding molecules. Cell adhesion. Chemotactics. Components,organization and functions of extracellular substances. Collagen and elastines.

13. Cell Cycle - Reproduction: Cell growth and division. Interphase. Cell cycle regulation during interphase - Cell cycle evolution and distinct control points. Setting of cell cycle control points. Mitosis and cytokinesis. Mechanisms that control mitosis. Meiosis. Stages of meiosis I and II.

14. Signal transduction principles: Role of protein phosphorylation in signal transduction.

15. Classification of biological signals. Growth factors. Epidermal growth factor receptor (EGFR).Role of signal transduction in cell differentiation and development. Cell cultures.

1. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of ICT in teaching • Projector system and pptx presentations • Internet connection • Use of bibliography search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of email and Department website for communication and information purposes

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	
Interactive teaching	
Study and analysis of bibliography	
Project	
Essay writing	
Educational visits	
Personal study	
Course total	*110*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	1.Written final exam (60%) that includes: • multiple choice questionnaires • short-answer questions • open- ended questions • Questions of judgment, theory understanding and method evaluation thinking • Problem solving Students, when given the topics, are informed about the evaluation method of each group of topics, depending on their degree of difficulty. Response competence and clarity, degree of critical thinking and language proficiency are taken into account. 2. Paper Presentation (40%) Theory is examined in the final examination, while in case of individual or group written work, the latter participates in up to 40% in grade configuration.

2. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. Greek

1. Alberts et al. Basic principles of Cell Biology. Borken Hill Publications, 2015
2. Marmaras Vassilis, Lambropoulou - Marmara Maria. Cell Biology, 5th edition, Chatziioannou publications, 2005
3. Lubert Stryer. Biochemistry. 7th edition, University Publications of Crete, 2015

B. Foreign language

1. DJ Watson. Molecular Biology of the Gene. 7th edn, Pearson, 2013
2. L. Berk et al. Molecular cell Biology. 2nd edn, W. H. Freeman and Company,2000
3. Alberts Bruce et al. Molecular Biology of The cell. 6th and, Garland Science, 2008

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	1041-1042	**SEMESTER**	**1st°**
COURSE TITLE	BIOPHYSICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHINGHOURS**	**CREDITS**
Lecture	3	7
Laboratory exercise	2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	Theory https://moodle.uniwa.gr/course/view.php?id=1728 Lab https://moodle.uniwa.gr/course/view.php?id=2275

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*

After the end of the course, the students will have acquired general knowledge of the theory and the applications derived from it in the field of Medical Physics, which are a basic background for a course of his specialty. This will help them in the understanding of modern methods, technologies and general applications that have been established and are to be introduced in medical practice.

The course aims at:

(a) providing basic knowledge of medical physics with specific interest in biological systems, which are necessary for the understanding and interpretation of physiological phenomena and processes occurring in humans;

b) providing specialized knowledge of physics, on which modern therapeutic and diagnostic methods with applications in Medicine and health sciences are based;

(c) assuring in general, the students' familiarity with modern medical technology and the rational way of thinking, that enables the estimation of physical quantities and numerical values and

d) familiarizing the students with the measurements and the experimental process, the way and the method of processing, evaluation and presentation of experimental data and results in the Physics laboratory.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations Decision-making

Working independently Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management Respect for difference and multiculturalism Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Search, analysis and synthesis of data and information, using the necessary technologies
- Autonomous work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking
- Exercise criticism and self-criticism: Identify problems by identifying contradictions and inconsistencies in the results of an experiment or exercise.

3. SYLLABUS

Theory

1. Physics in the biological-medical sciences. Physical quantities. General and special knowledge from the kinematics, dynamics and statics of bodies. Balance conditions and applications in the human body.
2. Work, power, energy. Simple machines. Kinesiology, Energy Metabolism,
3. Fluid mechanics (principles of hydrostatics, pressure, real and ideal fluids, elements of hydrodynamics, types of flows and categories of fluids, surface tension, transport and osmosis phenomena, Diffusion, systems dispersion of matter).
4. Heat, temperature, thermometers. Calorimetry. Convection, laws of thermodynamics, thermobiological applications.
5. Oscillations and fluctuations, wave phenomena, characteristics and properties of waves (wavelength, speed and propagation of the wave, energy wave, intensity, absorption). Sound, ultrasound and biological results from the application of ultrasound.
6. Nature and propagation of light. Visual phenomena. Areas and properties of optical spectrum of electromagnetic radiation. Its biological effects infrared and ultraviolet radiation.
7. Laser, principles of operation, radiation properties. Classification and technical features of Laser systems. Dosimetry and protection issues and Laser radiation safety.
8. Interaction of Laser with biological materials, Biomedical applications. Laser systems, uses and applications in Medicine.
9. Electricity Static Electricity, DC and AC. Dynamics of action, Production, Dissemination and Measurement of Biodynamics, Electrical properties of Nerves, Electrographs (Electrocardiograph, Electroencephalograph)
10. Effect of electricity on humans: Diathermy, nerve and muscle stimulation, Pacemaker, Electrical Safety.
11. Magnetism, properties of the magnetic field, magnetic properties of matter, biomagnetic therapeutic and diagnostic applications.
12. Elements of Atomic and Nuclear Physics (X-rays, electron microscopy, imaging techniques, stoichiometric analysis with X-rays, NMR, dosimetry). Ionizing radiation and biological effect. Radiation protection.
13. Radioactivity and dosimetry (elements of nuclear physics, radioactive decay and radiation, measurement of radioactivity, biological effects and results, applications in Medicine.

Laboratory

1. Introduction - Significant digits - Uncertainty (Average value - Absolute & Relative uncertainty) - Graphs
2. Determination of fixed spring
3. Gravity Acceleration Study - Simple Pendulum
4. Measurement of internal friction (viscosity)
5. Capacitor

6. Calculation of the focal length f from the linear magnification M.
7. Determination of the linear expansion coefficient
8. Heat exchange phenomena
9. Laser radiation study _ Comparison with conventional light sources
10. Spectroscope
11. Absorption of light from optically transparent media
12. Refraction - Calculation of refractive index
13. 13. X-rays: Radiation characteristics and study of absorption phenomena

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face, in the classroom or in Physics Laboratories
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education,* *communication with students*	Presentations and lectures using audiovisual media. • Use of ICT in teaching and laboratory training • Use of email and course website for communication and for informing students respectively • Provision of educational material from the internet through the course website on the Moodle platform, containing reports, references, software and general information, posting and distribution of scientific articles, instructions, lectures, questionnaires, information for attending seminars related to the course, etc.. • Performance, presentation and demonstration experiments with instruments in the classroom. • Assignment of homework and posting of them on the course website

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures-Presentations using audiovisual media	
Laboratory Exercise	
Course Total	***180***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theory • Final exam • Assignment of homework Laboratory • Final exam • Laboratory Assignment (compulsory) • • Mid-term evaluations (multiple choice test)

5. ATTACHED BIBLIOGRAPHY

Bibliography

1. Physics in Biology and Medicine , Paul DAVIDOVITS, Βιβλίο Εύδοξος [77657097], Εκδόσεις ΠΑΡΙΣΙΑΝΟΥ, 2018
2. Physics of the Life Sciences Newman Jay. Βιβλίο Ευδοξος [32997839]
3. Επίτομη ιατρική φυσική, Ψαρράκος Κυριάκος, Μολυβδά - Αθανασοπούλου Ελισάβετ, Γκοτζαμάνη - Ψαρράκου Άννα, Σιούντας Αναστάσιος. Βιβλίο Εύδοξος [22755181]:

A. Greek

1. Μ. Τζαφλίδου, Ιατρική Φυσική, Βιοηλεκτρισμός, Οπτική, Θερμότητα-Ψύχος, εκδόσεις Gutenberg, Αθήνα 2010
2. John R. Cameron, Φυσική του Ανθρωπίνου σώματος (ελληνική μετάφραση) Εκδόσεις: Επιστημονικές Εκδόσεις Παρισιάνου ΑΕ
3. Κ. Ψαράκου κ.α., Ιατρική Φυσική, τόμος Βος, University Press, Θεσσαλονίκη 1997,
4. Καρακώστας, Κομνηνός, Ειδικά Κεφάλαια Φυσικής, Εκδόσεις Ζήτη, Θεσσαλονίκη 2002
5. Ε.Κ. Πολυχρονιάδης κ.α., Φυσική με εφαρμογές στις βιολογικές επιστήμες, Εκδόσεις Γιαχούδη-Γιαπούλη, Θεσσαλονίκη 1988
6. Χ. Προυκάκης, Ιατρική Φυσική (τομοι Α',Β' και Γ'), επιστ. εκδόσεις Γ.Κ. Παρισιάνου, Αθήνα 1986
7. Ι. Σιανούδης, Βιοφυσική: θέματα Ιατρικής Φυσικής, Εκδόσεις Λύχνος, Αθήνα 2008
8. Πρώιμος, Ιατρική Φυσική, Πανεπιστήμιο Πατρών
9. Γ.Κ. Παρισιάνου ΑΕ, Αθήνα 2002 Κ. Ψαράκου κ.α., Ιατρική Φυσική, τόμος Βος, Εκδόσεις: University Press, Θεσσαλονίκη 1997

10. H. Young, Πανεπιστημιακή Φυσική, τόμος Α', εκδόσεις Παπαζήση. 1994

B. Foreign language

1. I.W. Richardson, E.B. Neergaard, Physics for Biology and Medicine, Wiley-Interscience, London 1972 Alan H. Cromer,

2. Jay Newman**,** Physics of the Life Sciences, Springer 2008

3. Physics for the life sciences, McGraw-Hill Book Co., 1981

4. Martin Holling, Medical Physics, University of Bath. Macmillan Science, 16-19 Project, 1990

5. A F Fercher, Medizinische Physik, Physik für Mediziner, Pharmazeuten und Biologen, Springer Verlag, Wien 1992.

COURSE OUTLINE

(1) General

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
DEPARTMENT	**BIOMEDICAL SCIENCES**		
SECTION	**MEDICAL LABORATORIES**		
ΕΠΙΠΕΔΟ ΣΠΟΥΔΩΝ	**UNDERGRADUATE**		
COURSE CODE	**1051**	**SEMESTER**	**1st**
TITLE	**BIOINFORMATICS**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**HOURS/WEEK**	**CREDITS**
Lectures		**3**	**3**
Lab		0	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	**General Foundation Course (GFC)**		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC164/		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

The aim of the course is to acquaint students with Informatics and Technology in Biomedical Sciences and their application in the field of health. In this context, basic concepts of network and internet are presented as well as online bibliographic databases which are widely used for the retrieval of scientific medical knowledge. Reference is made to health information systems, standards for coding and exchanging medical information provided by these systems. The course will teach the writing of scientific papers, oral presentations,

scientific papers as well as the study and critique of scientific texts based on international data.

The course aims at helping students understand the organizational, administrative and financial approach of the provided health services and the role that Biomedical Informatics plays in supporting medical decision making. In addition, it aims at helping them assimilate the most common technical solutions, clinical applications and features related to the safety and management of the medical equipment used (analysts, imaging, robotic systems, etc.) and operating programs in the field of health.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Individual assignments
- Group assignments
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

(3) **COURSE SYLLABUS**

The course briefly includes the following sections:

- Basic concepts of network applications in health information systems.
- Medical imaging application systems.
- Health information systems (Medical file, Regional and National databases via the internet).
- Standards and Codifications for the development of electronic health records (HER).
- Medical Laboratory Information Systems (Laboratory Information Systems - LIS, Equipment, Examinations, Biological Sample Systems).
- Picture Archiving and Communication systems-PACS (Device Network Communication, Device Topology), DICOM coding standard (Digital Imaging and Communications in Medicine).
- Invasive Surgery and Medical Robotics (Navigation Trackers, Optical Trackers, Classification Systems).
- Medical decision, Medical devices (Defibrillator, Pacemaker, Abdominal fibrillation, CARPA survival chain).
- Artificial Intelligence, Neural Networks, Fuzzy Logic.
- Familiarity with basic programming principles in Matlab environment (C language) in the field of health.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc</td><td>Theoretical lessons are carried out in the classroom. Lab work is carried out in the section’s X-ray rooms.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching and laboratory training and the use of e-mail and the website of the Department for communication and information of students respectively.

Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical</td><td>
<table>
<tr><th>Activities</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>90</td></tr>
<tr><td>Laboratory work</td><td></td></tr>
<tr><td>Individual study</td><td></td></tr>
</table>
</td></tr>
</table>

practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	***Course total*** | **90**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory** Written final exam (100%) that includes: – Development Questions – Multiple Choice Test – Short Answer Questions **Lab** Written and oral examination.

(5) **RECOMMENDED BIBLIOGRAPHY**

3. Βιβλίο (Book) - κωδικός Ευδόξου (Eudoxus Code) [102502984]: Biomedical Informatics, Ninos Konstantinos, 2021, ISBN: 9789606180484.

4. Βιβλίο (Book) - κωδικός Ευδόξου (Eudoxus Code) [59392670]: Management Information Systems in Practice, Kroenke M. David, Boyle J. Randall, 2016, ISBN: 9789963274048.

5. Βιβλίο (Book) - κωδικός Ευδόξου (Eudoxus Code) - [68373103]: Discovering Computers: Tools, Applications, Devices and the Impact of Technology, Vermaat Misty, Sebok susan, Freund Steven, Campbell Jennifer, Frydenberg Mark, 2017, ISBN: 9789963274475.

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**1061**	**SEMESTER**	A
COURSE TITLE	MATHEMATICS IN BIOMEDICAL SCIENCES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	2	2
Total	2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC172/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The students after the successful completion of the course will have acquired all the basic concepts of mathematics that are essential in the field of health sciences. In particular they will be able to:

- Solve linear and quadratic algebraic equations
- Comment on graphical representations of real functions of one variable
- Understand the concept of derivative
- Compute the derivatives of simple, composite and inverse functions
- Compute the limit of a function
- Find the extremes of real functions of one variable with the use of first and second

derivative and apply them in real problems

- Understand the use of integral and its applications in health sciences
- Appropriately use concepts from Calculus in problems that arise in the field of health sciences

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Exercise criticism and self-criticism • Mathematical thinking and analysis • Mathematical and analytical presentation of geometric concepts • *Search, analyze and synthesize data* with the use of the necessary technology • Autonomous work • Production of free, creative and inductive thinking	

(3) **SYLLABUS**

The course is designed for a set of 13 weeks of lectures. The topics that will be discussed are the following

- Linear Algebra
  - ♣ Matrices (definition, types and operations)
  - ♣ Determinant (definition, properties)
  - ♣ Linear systems (Cramer method, Gauss algorithm)
  - ♣ Inverse Matrix (computation and use in systems of linear algebraic equations)
- Real Functions of One Variable
  - ♣ Elementary functions
  - ♣ Limit of a function – Continuity
  - ♣ Differential Calculus of Functions of one variable
    - Definition, Differentiation Rules, Derivatives of Elementary Functions
    - Mean Value Theorem, Derivative of a Function and Monotonicity, Derivative and Local Extremes, L'Hopital Rule
    - Curved Functions, Inflection Points
  - ♣ Integral Calculus of functions of one variable
    - The fundamental theorem of calculus.
    - Integration techniques (integration by factors, recursively, rational functions, variable change).
    - Definite integral, Integral applications
    - Improper integral

(4) **TEACHING and LEARNING METHODS - EVALUATION**

DELIVERY *Face-to-face, Distance learning, etc.*	Face to Face session in classroom and lab	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Web search (literature review and data sources) • Utilization of E-class UNIWA platform (file exchange among professors and students) • Email • Specialized software (open source) for graphical representation of functions • Power Point Presentations	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	40
	Exercises to be solved/ Study of solved exercises	10
	Interactive teaching	10
	Assignment	20
	Self - Study (bibliography)	10
	Course total	90

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	During the semester students will be given problems-exercises which together with the material of the lectures will be an aid for the preparation of the final exams. In particular in the case that the students work in a given problem (by themselves or in a small group), they will present it (20% of the overall grade) and participate in the final written exams (80% of the overall grade)

(5) ATTACHED BIBLIOGRAPHY

A. **Greek**

1. Χαλιδιάς, Ν. (2018) Απειροστικός Λογισμός Γραμμική Άλγεβρα & Εφαρμογές, ΕΚΔΟΣΕΙΣ Broken Hill.
2. Ρασσιάς, Θ. (2014) Μαθηματική Ανάλυση, ΤΣΟΤΡΑ.
3. Φράγκος, (1999) Ανώτερα Μαθηματικά, ΣΤΑΜΟΥΛΗ ΑΕ.
4. Παπαγεωργίου, Έ.(2015) Βιοστατιστική και Εφαρμογές, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ ΜΟΝ. ΕΠΕ.
5. Κοκολάκης Γ., Φουσκάκης Δ., (2009) Στατιστική Θεωρία και Εφαρμογές, ΕΚΔΟΣΕΙΣ ΣΥΜΕΩΝ
6. Μπράτσος, Α. (2011), Εφαρμοσμένα Μαθηματικά, Εκδόσεις Α. Σταμούλη, Αθήνα, ISBN 9789603518747.
7. Μπράτσος, Α. (2002), Ανώτερα Μαθηματικά, Εκδόσεις Α. Σταμούλη, Αθήνα, ISBN 963514535 / 9789603514534
8. Ξένος Θ. (2004), Γραμμική Άλγεβρα, Εκδόσεις Ζήτη, ISBN 9604319043.

English

1. Bland M. (1995): An Introduction to Medical Statistics. Second Edition. Oxford University Press.
2. Finney R. L., Giordano F. R. (2011), Απειροστικός Λογισμός Ι, Πανεπιστημιακές Εκδόσεις Κρήτης, ISBN 9789605241834.
3. Finney R. L., Giordano F. R. (2004), Απειροστικός Λογισμός ΙΙ, Πανεπιστημιακές Εκδόσεις Κρήτης, ISBN 9789605241841.
4. Don, E., Schaum's Outlines - Mathematica (2006), Εκδόσεις Κλειδάριθμος, ISBN 9789604610006.
5. Lipschutz S., Lipson M.L., Θεωρία και προβλήματα στη Γραμμική Άλγεβρα, Εκδόσεις

Τζιόλα, ISBN 9608050936.

6. Spiegel M., Wrede R. (2006), Ανώτερα Μαθηματικά, Εκδόσεις Τζιόλα, ISBN 9604180878.

7. Spiegel M., Complex Variables, Εκδότης McGraw-Hill Education Europe, ISBN 0070602301.

8. Strang G., (2005), Γραμμική Άλγεβρα και εφαρμογές, Πανεπιστημιακές Εκδόσεις 7 Κρήτης, ISBN 9607309707.

9. M.H. Katz (1999): Multivariable Analysis. A Practical Guide for Clinicians. Cambridge University Press.

Γ. **Useful links**

- http://en.wikipedia.org/wiki/Main_Page
- http://eqworld.ipmnet.ru/index.htm
- http://mathworld.wolfram.com/
- http://eom.springer.de/

9.2. 2nd Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**2011**	**COURSE SEMESTER**	**2nd**
COURSE TITLE	**ANATOMY II**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**4**	**6**
Laboratory	-	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**General Background (GB)**
PREREQUISITE COURSES:	--
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE144/

2. LEARNING OUTCOMES

Learning outcomes *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.*

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

Aims and Scope

- The study of the topography, morphology and basic structure of organic systems of the human body, not including the cardiovascular and respiratory tract that are covered by Anatomy I, including the nervous and the endocrine system, and the sensory organs.
- The acquisition of knowledge of the anatomical structure of organic systems of the human body and the familiarity with the anatomical parts that constitute the systems, with the exception of those of cardiovascular and respiratory that are covered by the Anatomy I.

After successful completion of this course the student will be able to:

- Know the basics and critical features of the anatomy of the digestive, urogenital (urinary and reproductive system), endocrine, nervous system and sensory organs of the human body and the physiological functions of the human body.
- Describe, identify and highlight the corresponding anatomical areas with the underlying organs and their structural components.
- Be familiar with the human body.
- Understand the topography, morphology and broad structure of the systems of the human organism except of the respiratory and cardiovascular tract which are covered by Anatomy I.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Production of new research ideas	*Others…* *…….*

- Working independently
- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

3. SYLLABUS

Theory

The course is a basic introductory course on the concepts and principles of the science of Anatomy of the human body and is essential for the understanding of the physiology and pathology of the human being. The syllabus of this course aims to introduce students to the basic concepts of the structure, morphology, topography and functioning of organs and systems of the human body. It also provides to the student knowledge and skills in order to recognize, distinguish and describe the location and appearance of basic anatomical structures, organs and human systems (except for the cardiovascular and respiratory system covered by the Anatomy I) and to make detection and clinical evaluation of these anatomical regions. At the same time contributes to the learning of medical terminology and in the creation of scientific communication code of the professionals working in health area.

Theory

Detailed description of the organs of human systems except for those of respiratory and cardiovascular system (described by Anatomy II), as well as of the nervous, endocrine system, and the sensory.

1. **Gastrointestinal System-Part I. Upper Alimentary Tract.** Organs of the upper gastrointestinal tract (Parts, structure, function, partial segments). Locations of metabolism and absorption of nutritional substances (mechanical digestion): mouth, chemical digestion: stomach, duodenum, absorption: small intestine, portal system). Oral cavity, tongue, pharynx, oesophagus, stomach.

2. **Gastrointestinal System-Part II. Lower Alimentary Tract.** Organs of the lower gastrointestinal tract (Parts, structure, function, partial segments). Small intestine (duodenum, jejunum, ileum), large intestine (cecum colon with appendix, ascending colon, transverse colon, descending colon. Sigmoid colon, rectum, annus.

3. **Glands of Digestive system**. Liver, pancreas, inner and outer hepatic bile transfer system, bile vessels, gallbladder, spleen, salivary glands. Anatomic elements of the hilus of liver (portal vein, hepatic artery, cholate vessel, etc).

4. **Urinary System. Part I. Secretory Section. Parts of the secretory section** (renal corpuscle:

glomerulus and Bowman capsule, proximal convoluted tubules, descending loop of Henle, ascending loop of Henle, distal convoluted tubule, collecting duct, renal papilla). Anatomic elements of the hilus of kidney.

5. **Urinary System. Part II. Drainage Section.** Analytical description of the anatomic parts of kidney drainage tube (minor and major renal calyx, renal pelvis, ureter, urinary bladder – urethra (male and female).

6. **Male Reproductive System.** Parts of the external and internal male genital organs (analytical description). Pubes, scrotum, penis, testis, epididymis, spermatic cord and ductus deferens (vas deferens), seminal vesicles, ejaculatory ducts, prostate gland, Cowper's glands. Testis tunica.

7. **Female Reproductive System-Breast.** Analytical description of the internal and external female genital organs (ovaries, uterine (Fallopian) tubes, uterus-cervix, vagina, pubes, major and minor lips of vulva, clitoris, vestibule of vagina, vestibular bulbs, Bartolini (vestibular) glands. Ligaments of the uterus-ovaries. Mammary gland: Structure, vessels, lymph nodes.

8. **Cerebrospinal Nervous System**. **Part I.** Functional division of brain. Nervous cells – neuroglia, neurotransmitters. Anatomical and embryological division of brain. Cerebral centers, ligaments of the cerebral hemispheres.

9. **Cerebrospinal Nervous System**. **Part II.**

   Cerebellum, medulla oblongata, medulla spinalis. Meninges cerebrum and medulla spinalis. Cerebral vessels – Willlis hexagon, venous sinuses. Cerebrospinal fluid (production and circulation).

10. **Peripheral Neural System I-Cerebral Nerves.** Cranial nerves. The 12 cranial nerves (type of neurosis, aesthetic, kinetic, mixed, cranial nuclei location, foramen traversal).

11. **Peripheral Neural System II-Autonomous Nervous System**. Spinalis nerves and plexuses. Cervical, brachial, lumbar, sacral, vulvar, coccygeal, (location of origin, formation, areas giving neurosis). Autonomous Nervous system. Sympathetic and Parasympathetic Neural System-Celiac (Solar) plexus (location of their nuclei, organs giving neurosis and functions).

12. **Neuroendocrine and Endocrine System.** Broad description of the hypothalamus and pituitary gland (anterior or adenohypophysis, posterior or neurohypophysis), conarium (epihysis) and basic endocrine glands-secreted hormones. Thyroid, parathyroid glands, endocrine pancreas, adrenal glands.

13. **Eye-Ear-Skin and Epidermal Appendages.** Anatomic structure of Sensory organs. Description of the organs of audition and vision. Description of the skin and its appendages. Structure of hairs, sebaceous and sweat glands**.**

4. TEACHING and LEARNING METHODS – EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face laboratory of Anatomy-Histopathology
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with*	• Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation and • use of e-mail and Web page of the Department for the

<table>
<tr><td>students</td><td>students communication, correspondence and notification, accordingly</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments. Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), anatomic images, questionnaires, informations for the observation of congresses related to the teaching lesson of the academic course, etc.</td><td>160</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>160</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory

Writing Final Examination (100%) which includes:

-Multiple choice questionnaires

- Short answer questions

- Open-ended questions

Optional essays/reports during semester or progress examinations</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Moore K.L. (2012) Clinical Anatomy, 2nd edt, BrokenHill Publ. Ltd, Cyprus.
2. Jacob S. (2009) Human Anatomy, Scientific Publ. Parisianou. Athens.
3. Hansen J.T., LambertD.R. (2011) Netter's Anatomy I: Basic Clinical Anatomy Broken Hill Publ. Ltd,

Cyprus.

4. Snell R. (2009) Clinical Anatomy. Medical Publications Litsas, Athens, Greece.
5. Faiz R., Moffat D. (2006) Anatomy at a Glance. 1th edition, Parisianos S.A., Athens, Greece.
6. Putz R. and Pabst. Sobotta R. (2006) Atlas of Human Anatomy, 2 Volume Set, 14th edition, Urban & Fisher, München, Germany.
7. Putz R. and Pabst. (2010). Sobotta R. Atlas of Human Anatomy, 22th edition, Parisianos. Athens
8. Rohen, Johannes W. (2006) Colored Atlas of Humana Anatomy, Medical Publications P.C. Paschalides, Athens, Greece
9. Drake, RichardL. (2006) Gray's Anatomy, Medical Publications P.C. Paschalides, Athens, Greece
10. G. Agur A. (2010). Grant's Anatomy, 1st edition, BROKEN HILL PUBLISHERS LTD, Cyprus
11. Gilroy A.A. (2011). Promitheas, Basic Descriptive Anatomy D:. Basic Principles of Descriptive Anatomy, 1st edition, BROKEN HILL PUBLISHERS LTD, Cyprus
12. Paraskevas K. G. (2008). Human Anatomy.1st edition, University Studio Press, S.A., Thessaloniki
13. F. Netter (2016): Atlas of Human Anatomy, 6th English edition, 3rd Greek edition, Broken Hills Publishers, Nicosia
14. Marieb, Wilhelm, Mallatt (2018). Anatomy. Lagos Medical Publications, Athens, Greece

-*Related academic journals:*

1. Clinical Anatomy, ISSN 08973906, USA
2. Anatomical Science International, ISSN 14476959, UK
3. Journal of Anatomy, ISSN 14697580, UK
4. Artery Research, ISSN 18729312, Netherlands
5. European Journal of Anatomy, ISSN 11364890, Spain
6. Annals of Anatomy, ISSN 09409602, Germany
7. Anatomy Research International, ISSN 20902743, Hindawi Publishing Coorporation, UK
8. Advances in Anatomy, ISSN 23566558, Hindawi Publishing Coorporation, UK

COURSE OUTLINE

1. GENERAL

SCHOOL	OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	MEDICAL LABORATORIES		
COURSE CODE	2021	**SEMESTER**	2nd
COURSE TITLE	BIOCHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHINGHOURS**	**CREDITS**
THEORETICAL LESSONS	3	3
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	http://www.teiath.gr/seyp/iatrika_ergastiria/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

At the end of this course the student will be able to:

● *Have general knowledge of the chemical composition, structure and biological action of the basic biomolecules (carbohydrates, proteins, lipids, nucleic acids).*

● *Know the classification of proteins into categories and their structure and function*

of the principal members of each category

● *know the classification of enzymes, the determination of kinetic constants, the general mechanisms of enzymatic reactions, and the enzymatic regulation*

● *Describe the main processes of biosynthesis and catabolism of micro- and macromolecules (carbohydrates, fatty acids and other lipids, amino acids and proteins, nucleotides and nucleic acids).*

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…

	…….

At the end of this course the student will have developed the following skills:

● Ability to demonstrate knowledge and understanding of essential data, concepts, principles and theories related to chemical composition, structure and function of biomolecules (carbohydrates, lipids, proteins, nucleic acids).

● Ability to apply this knowledge and understanding to quality solution and quantitative problems of an unfamiliar nature.

● Study skills needed for continuous professional development.

● Ability to interact with others in biochemical problems or interdisciplinary in nature.

3. SYLLABUS

●Regulatory systems of the body, water balance, water metabolism, sodium and potassium, control and clinical disorders of acid-base balance.

●Amino acids and proteins. Structure and function of proteins. Physicochemical protein properties, methods of isolation, purification, separation and protein detection. Diseases.

Biosynthesis and breakdown of amino acids. Carbonate metabolism skeletal, inherited diseases of amino acid metabolism.

●Protein categories. a) Structural proteins. Collagen, types of collagen, elastin, keratin. b) Functional proteins. Catalytic proteins (enzymes). General mechanisms of enzymatic reactions. c)Transport proteins. Hemoglobin, myoglobin d) Defense proteins (antibodies). Structure and function, use of antibodies in analysis. e) Contractile proteins. Myosin, actin, structure and function. Future use modified proteins from eye chromophores in medicine imaging techniques

●Lipids and lipoproteins. Structure and function of lipoproteins, metabolism, dyslipidemias, atherosclerosis.

Fatty acids. Biosynthesis and storage of fatty acids, essential fats acids, fatty acid oxidation. Polyunsaturated fatty acids and health, Lecithin

●Carbohydrates. Glycogen structure, glycogenogenesis-glycogenolysis, gluconeogenesis, glycoproteins, proteoglycans. Carbohydrates and human health. Correlation of starch and

processed carbohydrate intake with dental hygiene.

● Metabolism and energy. Calories and dietary calories.

●Krebs cycle and energy balance.

●Main processes of biosynthesis and catabolism of micro- and macrobiomers (carbohydrates, fatty acids and other lipids, amino acids and proteins, nucleotides and nucleic acids)(in summary).

●Vitamins and Trace elements: Fat-soluble and water-soluble vitamins, biological actions, their relationship with metabolism, diseases associated with abnormal taking (bones, eyes). Importance of adequate calcium and phosphorus intake in bones.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc.</td><td colspan="2">Face to face teaching</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education,

communication with students</td><td colspan="2">Use of ICT in teaching, Communication with students, Teaching through video, Collaboration between students – professors through short assays. Use the e-class for posting and

circulation of scientific articles, instructions, lectures, useful links, questionnaires, information on attending conferences and seminars related to the course, etc.</td></tr>
<tr><td rowspan="11">TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>Activity</td><td>Semester workload</td></tr>
<tr><td>Lectures-Presentations with

use of audiovisual media.</td><td>90</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>90</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td colspan="2">Written final exam (100%) that includes:

Multiple Choice Test

Short Answer Questions</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.Applied Biochemistry (Theory-Exercises). GA Karikas, Bibliopolis SA, 2012

2. Basic Medical Biochemistry Marks. Michael Lieberman, Allan D. Marks.Editions Parisianou, 2014

3. Medical Biochemistry, J.W. Baynes, M.H. Dominiczak, 2nd edition, Scientific Parisianou Publications SA

4. Harper's Biological Chemistry. Paschalidis Publications, 2011

5. Basic Principles of Biochemistry, Lehninger. Paschalidis Publications, 2007

6. Basic Biochemistry K. Dimopoulos, S. Antonopoulou. University Publications Athens, 2009

7. Biochemistry. P.Karlson, D Doenecke, J. Koolman. Litsa Publications, 1998

Principles of Biochemistry. D.L.Nelson, M.M.Cox, Lehninger, W.H. Freeman, 2004

8. Harper's Illustrated Biochemistry R. Murray, D. Granner, P. Mayes, V. Rodwell, 26th ed.McGrow-Hill, 2003

9. Biochemistry. N. Linardakis, C. Wilson, 1998

10. Clinical Biochemistry. A Gaw, Churchill Livingstone, 1999

Related academic journals:

Analytical Biochemistry.

Annual Review of Biochemistry.

Annual Review of Chemical and Biomolecular Engineering.

Archives of Biochemistry and Biophysics.

The Journal of Biochemistry

Methods in Enzymology

Journal of Biological Chemistry

Biochimica et Biophysica Acta

Analytical Biochemistry

Annual Review of Biochemistry

Journal of Cellular Biochemistry

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION			
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	2031	**SEMESTER**	2nd
COURSE TITLE	ORGANIC CHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHINGHOURS**	**CREDITS**
LECTURES	3	3
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	GBC
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	UNIWA Open eClass | ΟΡΓΑΝΙΚΗ ΧΗΜΕΙΑ

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

The student, with the successful completion of the course, should:

- know the basic categories of organic compounds and be able to predict their chemical behavior based on their molecular structure.

- recognize the functional groups of organic compounds, understand the reactions and the mechanisms associated with them and relate the structure of the compounds to their biological activity.

- Describethe bonds involved in organic compounds with C-C or C-heteroatom single or multiple bonds and conjugated bonds and their effect on the geometry and reactivity of the system.

- Know the correct names (prefixes and suffixes) of the common functional groups. Given a structure or abbreviated type to use the IUPAC nomenclature to properly name organic compounds. Given an IUPAC name for any organic compound to draw its structure correctly.

- Recognize a stereogenic (chiral) center in a molecular structure.

- Given the reactants (a) identify nucleophilic center, the electrophilic center and the leaving group, (b) decide (if possible) if a SN1 or SN2 mechanism will be followed and (c) predict the structure of the products.

- Given the substrate, reagent and reaction conditions (a) predict the structure of the product (s), indicating the stereochemistry where necessary, (b) predict which product will be the main one, where more than one products are formed and (c) predict whether substitution or elimination will be the main reaction.

- Given the reactants (a) predict the structure of the product, indicating its stereochemistry (b) predict which addition product will be the main one, where more than one are formed.

- Use curved arrows and reaction diagrams to show the mechanisms of electrophilic aromatic substitution. Predicts and explains the entry point of a second substituent and the rate of substitution, in a monosubstituted benzene ring.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical

Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

At the end of this course the student will have further developed the following skills:

- Ability to demonstrate knowledge and understanding of essential data, concepts, theories and applications related to Organic Chemistry.
- Ability to apply this knowledge and understanding to solve problems related to Organic Chemistry.
- Ability to adopt and apply methodology in the solution of unfamiliar problems.
- Study skills needed for further professional development.
- Ability to interact with others, in chemical problems, in an international or an interdisciplinary environment.

3. SYLLABUS

1. Carbon Chemistry - Bonds and Structure of Organic Compounds

Atomic orbitals- Ionic and covalent bond- Hybridization- Intermolecular forces.

2. Nomenclature of Organic Compounds - Homologous series

3. Isomerism - Stereochemistry

Structural Isomerism - Stereoisomerism - Enantiomerism - Light polarization Racemic mixtures - Diastereomerism.

4. Hydrocarbons

Alkanes and cycloalkanes - Alkenes - Alkynes - synthesis methods – chemical properties- geometric isomerism. Addition Reactions.

5. Alkyl halides

Nomenclature - chemical properties - mechanism of nucleophilic substitution, SN, elimination mechanism E.

6. Alcohols - Ethers

Nomenclature-Methods of synthesis-acidic character- physical and chemical properties

7. Aldehydes - ketones

Nomenclature-Methods of synthesis - physical and chemical properties of aliphatic and aromatic aldehydes and ketones.

8. Carboxylic acids and their derivatives

Nomenclature - acidity - synthesis methods - physical and chemical properties acyl halides -Anhydrides - Esters - Amides - Nucleophilic substitution.

9. Amines- Amino Acids- Peptides- Proteins

Nomenclature- Amine basicity- Synthesis methods- Physical and chemical properties- amino acid detection- synthesis and detection of peptides- proteins structure.

10. Aromatic hydrocarbons-benzene

Benzene structure, aromaticity and Huckel rule-nomenclature, electrophilic aromatic substitution in benzene, mono- and bi-substituted benzene.

11. Heterocyclic compounds

Heterocyclic compounds with a five-membered and a six-membered ring (furan, pyrrole, thiophene, pyridine) - Porphyrins and alkaloids.

12. Carbohydrates

Structure and classification- D and L stereochemical arrangement of monosaccharides-stereochemical representation- circular structure-reactions-disaccharides-polysaccharides- sugars in biological molecules.

13. Lipids

Triglycerides- phospholipids- waxes- steroids- terpenes

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching. Use of the e-mail and the course website for communication and notification of students. Use the e-class for posting and circulation of scientific articles, instructions, lectures, useful links	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials,*	***Activity***	***Semester workload***
	LECTURES	90

placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*		
	Course total	*90*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%) that includes: Multiple Choice Test Short Answer Questions	

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

- Carrey F. A. (2007). «Organic Chemistry» Mc Graw-Hill
- Wade L. G. (2005). «Organic Chemistry» Pearson Prentice Hall
- Schoffstall A. M., Gaddis A. B., Druelinger M. L. (2004). «Microscale and Miniscaleorganic chemistry laboratory experiments» Mc Graw-Hill

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION			
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	2041	**SEMESTER**	2nd
COURSE TITLE	INTRODUCTION TO BIOMEDICAL SCIENCES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES	2	2
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC312/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of the course is for students to:

- understand the history and knowledge field of Biomedical Sciences.

- know their professional rights.
- delve deeper into the subjects of the Department, so that they can choose the science and the direction they will follow.

The aim of the course is for students to gain a general picture of the subject of their studies, the requirements and obligations it entails, as well as the subject of a future profession.

In particular, students upon completion of the course:

- Will Have a general view and get a sense of the learning field they will study.
- will get to know the history, the philosophical dimension and the ethics of the Biomedical Sciences.

• will get to know the object, the possibilities and the professional targeting of the individual directions.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Search, analysis and synthesis of data and information, using the necessary technologies • Autonomous work • Teamwork • Work in an interdisciplinary environment • Project planning and management	

(3) **SYLLABUS**

Theoretical Part of the Course

. Introduction to the history of Biomedical Science and Biomedical Technology.

2. Introduction to Medical and Biomedical Ethics.

3. History of the scientific and professional communities of Biomedicine.

4 & 5. History, field of knowledge, object and professional dimension of "Aesthetics and Cosmetology"

6 & 7. History, field of knowledge, subject and professional dimension of "Radiology and Radiotherapy"

8 & 9. History, field of knowledge, object and professional dimension of the "Medical Laboratories"

10 & 11. History, field of knowledge, object and professional dimension of "Dental Technology"

12 & 13. History, field of knowledge, object and professional dimension of "Optics and Optometry"

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures,	60
Study and analysis of bibliography	60
Course total	*120*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

The evaluation language of the course is Greek.
Students can be examined in the following ways:
- Final written examination using the test method of multiple choice or short answer questions
- Presentation of individual and/or written assignments
- Group and/or individual work
- Combination of the above.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Beauchamp TL, Childress JF (2009). Principles of biomedical ethics. 6th ed. Oxford: Oxford University Press.

Sarah Jane Pitt, Jim Cunningham. An Introduction to Biomedical Science in Professional and Clinical Practice. Whiley, 2009

Ilana Löwy, Historiography of biomedicine: "bio," "medicine," and in between, Isis. 2011 March 102(1):116-22

Reiser, S. J. (1978). Medicine and the reign of technology. Cambridge, New York: Cambridge University Press.

Stanton, J. (ed.). (2002). Innovations in Health and Medicine: Diffusion and resistance in the twentieth century. London & New York: Routledge.

6. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**2051-2052**	**COURSE SEMESTER**	**2nd**
COURSE TITLE	**PHYSIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**4**	**8**
Laboratory	**2**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**General Background (GB)**
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC144/

7. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The course gives the student a clear insight into the structure and function of the most important organs and organ systems composing the human organism.

Purpose and aim of the course is to introduce students to physiological functions and homeostatic mechanisms of the human body against systems, the general rules governing the multifaceted and complex functional interdependence, their normal operating parameters and possible physiological deviations in cell level, tissue, organ and operating system.

After the successful completion of the course the student will be in the position to:

– Recognize and describe the physiological functions and the fundamental mechanisms underlying normal function of cells, tissues, organs, and organ systems of the human body.

--Understand the principles of the systems of the human body that coordinate all physiological functions and explain the basic mechanisms of homeostasis.

– Analyze the physiological function of a tissue or organ and the individual biological systems in relation to the support of the whole organization to be able to perceive the deviation from normal and semiotics-symptoms arising due to this disorder.

– Apply knowledge of functional mechanisms and their regulation to explain the pathophysiology underlying common diseases.

– Be familiar with scientific terminology-nomenclature of the science of human physiology, so to understand and use it accurately and scientifically to exercise his profession.

--Identify and utilize appropriate reference resources to clarify and expand knowledge of Physiology.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Working in an interdisciplinary environment	*Others…*
Production of new research ideas	*…….*

- Working independently
- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

8. SYLLABUS

COURSE CONTENT

1. Basic operating principles of the human body. Cell and tissues.

2. Water, Electrolytes, Acid-Base Balance

3. Hematopoietic – Lymphatic system.

4. Immunity. Immune system

5. Heart and circulation.

6. Respiratory system.

7. Urinary system

8. Muscular system- Muscles- Muscle tissue

9. Nervous system. Senses – Senses.

10. Endocrine glands. Endocrine system.

11. Genital (reproductive) system. Fertilization - Pregnancy - Lactation

12. Digestive (Gastrointestinal) system. Pancreas-Liver-Bile

13. Metabolism. Nutrition. Thermoregulation

Laboratory

The laboratory part of the course includes exercises on all systems, specifically the following:

1. Microscope. Cell.

2. Hematocrit-Erythrocyte Sedimentation Rate-Flow Cytometry.

3. Blood groups classification. Hemoglobin electrophoresis. INR

4. Electrical and mechanical phenomena in the heart. Electrocardiogram.

5. Blood pressure measurement. Ankle Brachial Index (ABI Test). Chest X-ray. Echocardiography.

6. Work of breathing. Spirometry. Mechanics of Breathing

7. Tendon reflexes-Electromyogram

8. Vision. Color vision. EEG

9. Body composition. Anthropometry. Measurement of basal metabolism.

10. Nutritional assessment. Assessment of nutritional status Dietary patterns. Metabolic syndrome-glucose-lipid measurement.

11. Determination of bone density by ultrasound. FRAX method

12. Kidney function check. Calculation of creatinine clearance. Audiometry.

13. Laboratory examinations

9. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>In lecture hall. Face to face

laboratory of Physiology</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of I.C.T. in Teaching for the slide show screen and course presentation and use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments. Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), anatomic images, questionnaires, informations for the observation of congresses related to the teaching lesson of the academic course, etc.</td><td></td></tr>
<tr><td>Laboratory Exercise, Field Exercise, in small groups of 20-25 students.</td><td></td></tr>
<tr><td>Course total</td><td>210</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive,</td><td>Theory

Writing Final Examination (100%) which includes:

-Multiple choice questionnaires</td></tr>
</table>

multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	- Short answer questions - Open-ended questions **Laboratory** **3.** Oral/ Writing final Examination with multiple choice questionnaires **4.** Essay/report for the laboratory part (optional)

10. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Χανιώτης Φ. – Χανιώτης Δ. Φυσιολογία, Ιατρικές Εκδόσεις Λίτσας, Αθήνα 2009.
2. Βενετίκου Μ. Φυσιολογία του ανθρώπου, Εκδόσεις Ζεβελεκάκη, Αθήνα 2016
3. Χανιώτης Δ. – Χανιώτης Φ. Μαθήματα Φυσιολογίας, Ιατρικές Εκδόσεις Λίτσας, Αθήνα 2016.
4. Πλέσσας Σ. Φυσιολογία του ανθρώπου, Εκδόσεις Φάρμακον Τύπος, Αθήνα 2010
5. Widmaier E., RaffH., StrangK. Vander's Φυσιολογία του Ανθρώπου 2η εκδ. Broken Hill Publishers LTD, 2016
6. Mulroney S. Myers A. Netter's βασικές αρχές φυσιολογίας του ανθρώπου, Broken Hill Publishers LTD, 2010
7. Costanzo L.S. Φυσιολογία, Εκδόσεις Λαγός Δημήτριος, Αθήνα 2012.

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**2061-2062**	**SEMESTER**	2nd
COURSE TITLE	BIOSTATISTICS		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
	Lectures	2	6
	Practice	2	
	Total	4	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC129/		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Learning outcomes- EQF Level: 6

The purpose of the course

The course aims to enable students to understand the statistics' techniques and to become familiar with the statistical science. Additionally, upon the completion of the course of Applied Statistics the students will be able to think in a more efficient way and make better decisions in relation to the uncertainty of the future. Moreover, it will be possible to implement the theory of statistics in P/C lab with the appropriate statistical packages as SPSS.

Learning outcomes

On successful completion of the course the students will have acquired all the basic concepts of statistics that are essential in the field of health sciences. In particular, they will be able to:

- Have basic knowledge about statistics and its application to the description and analysis of data in health science.
- Understand the methods of descriptive statistics and statistical inference in topics of health research and practice.

As far as knowledge is concerned, students will know to recollect and describe:

- data collection and analysis
- The use of hypothesis testing
- The estimation of correlation and regression

In regard to the skills, students will be able to explain and deduce conclusions regarding:

- data collection and analysis.
- The use of hypothesis testing.
- The estimation of correlation and regression.

With reference to competences students will be capable to apply the above as follows:

- By organizing data.
- By understanding basic statistical tools.
- By using statistical techniques for the analysis of real data.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Exercise criticism and self-criticism • Mathematical thinking and analysis • Mathematical and analytical presentation of geometric concepts • Search, analyze and synthesize data with the use of the necessary technology • Autonomous work • Production of free, creative and inductive thinking	

(3) **SYLLABUS**

Theory

The course is designed for a set of 13 weeks of lectures. The topics that will be discussed are the following:

- The role of statistics in health sciences –
- Basic concepts – Choosing the appropriate statistical analysis – Design of a medical research
- Population and Sample – Sampling methods – Size of sample
- Collecting and presenting data
- Statistical Descriptive Measures
- Mean-Variance
- Hypothesis Testing –Confidence Intervals
- Analysis of Variance – Applications
- Non-parametric tests
- Odds Ratio – Relative Risk
- Dependence – Correlation
- Linear Regression – Applications
- Logistic Regression - Applications

Lab

The lab sessions take place in a computer lab equipped with all the necessary software. The following sections are covered:

- Descriptive Statistics
- Presenting Data
- Confidence Intervals
- Hypothesis Testing (t-test, independent samples)
- Hypothesis Testing (t-test, dependent samples)
- Hypothesis Testing (proportions)
- Non-parametric procedures (chi-square – Kruscal-Wallis, …)
- Non-parametric procedures (independent samples, Mann-Whitney test, Wilcoxon test, …)
- Analysis of Variance
- Linear Regression
- Logistic Regression
- General Exercises
- Final Exams

(4) **TEACHING and LEARNING METHODS - EVALUATION**

DELIVERY *Face-to-face, Distance learning, etc.*	Face to Face session in classroom and lab
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Web search (literature review and data sources) • Utilization of E-class UNIWA platform (file exchange among professors and students) • Email • Specialized statistics software • Power Point Presentations
TEACHING METHODS *The manner and methods of teaching are described in detail.*	

Activity	*Semester workload*
Lectures	80
Study of solved exercises	40

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	Exercises to be solved	20
	Self - Study (bibliography)	20
	Course total	*160*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	During the semester students will be given problems-exercises which together with the material of the lectures will be an aid for the preparation of the final exams. In particular in the case that the students work in a given problem (by themselves or in a small group), they will present it (20% of the overall grade) and participate in the final written exams (80% of the overall grade)	

(5) ATTACHED BIBLIOGRAPHY

A. **Greek**

1. Βιοστατιστική και Εφαρμογές Παπαγεωργίου Έφη ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ ΜΟΝ. ΕΠΕ 41962286
2. Στατιστική με SPSS, Παπαγεωργίου Έφη, Χαλικιάς Μιλτιάδης, BROKEN HILL PUBLISHERS LTD, Έκδοση: 1/2021 Κωδ. Εύδοξος: 102070238
3. Παπαγεωργίου Έφη (2017).Βιοστατιστική και Εφαρμογές, 2η Έκδοση, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ ΜΟΝ. ΕΠΕ.
4. Παπαγεωργίου Έφη (2015).Βιοστατιστική και Εφαρμογές, ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ ΜΟΝ. ΕΠΕ.
5. Τριχόπουλος Δ, Τζώνου Α, Κατσουγιάννη Κ. (2000) Βιοστατιστική. Εκδόσεις Παρισιάνος. Αθήνα.
6. Τζώνου Α, Κατσουγιάννη Κ. (1997) Ασκήσεις Βιοστατιστικής. Εκδόσεις Αθανασοπούλου-Σ.Αθανασόπουλος Ο.Ε. Αθήνα, 1997.
7. Petrie Aviva,Sabin Caroline, (2008) Ιατρική Στατιστική με μια ματιά. Εκδόσεις Παρισιάνος. Αθήνα.
8. Pagano Marcello, Gauvreau Kimberlee (2002) Αρχές Βιοστατιστικής Γ.ΠΑΡΙΚΟΣ & ΣΙΑ ΕΕ.

9. Κατσουγιαννόπουλος Βασίλειος, (2009) Βασική Ιατρική στατιστική ΕΚΔΟΤΙΚΟΣ ΟΙΚΟΣ ΑΔΕΛΦΩΝ ΚΥΡΙΑΚΙΔΗ Α.Ε.
10. Σταυρινός Βασίλης Γ., Παναγιωτάκος Δημοσθένης Β. Βιοστατιστική, Εκδόσεις Γ. Δαρδάνος - Κ. Δαρδάνος Ο.Ε.

English

1. M. Bland (1995): An Introduction to Medical Statistics. Second Edition. Oxford University Press.
2. M.H. Katz (1999): Multivariable Analysis. A Practical Guide for Clinicians. Cambridge University Press.
3. L.D. Fisher and G. van Belle (1993): Biostatistics - Methodology for the Health Sciences. Wiley, New York.
4. S. Holm (1979): A Simple Sequentially Rejective Multiple Test Procedure. Scandinavian Journal of Statistics, 6, 65-70.
5. J.C. Hsu (1996): Multiple Comparisons. Theory and methods. Chapman and Hall.

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
STUDY LEVEL	*Undergraduate*		
COURSE CODE	**2071**	**SEMESTER**	2nd
COURSE TITLE	BIOMEDICAL ENGLISH TERMINOLOGY2		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
LECTURES	2	2

COURSE TYPE	General Background
PREREQUISITES	NO
LANGUAGE	English
IS THE COURSE OFFERED forERASMUS STUDENTS?	YES
COURSE WEB PAGE	https://bisc.uniwa.gr/en/homepage/

11. LEARNING OUTCOMES

Learning Outcomes
On completion of the course the students will be capable to: • Develop oral and written skills in communication and translation through the analysis of medical articles and presentations in the classroom. • Understand and comment on scientific texts. • Express their ideas in formal English using terminology. • Successfully handle the terminology of a scientific text. The purpose of the course is the use and enrichment of the specified vocabulary in biomedical science, as well as the understanding and processing of scientific text based on

the curriculum of the five directions of the department respectively.

The aim of the course is to develop the students' ability to analyze and understand scientific texts and to use terminology related with the courses that are contained in the study guide. The lesson's curriculum will help students who want to attend international conferences or students that are preparing for postgraduate courses abroad.

General Competencies

- Search, analysis and synthesis of data and information, using the necessary technologies.
- Adaptation to new situations.
- Decision making.
- Autonomous work.
- Teamwork.
- Production of new research ideas.
- Project design and management.

12. COURSE CONTENT

1. Description and processing of scientific articles written in English.
2. English terminology and rendering of scientific texts related to anatomy (The organs of the human body)
3. English Terminology and rendering of scientific texts related to physiology (The physiological functions of the body and first aid).
4. English terminology and rendering of scientific texts related to biophysics, chemistry - organic/ -inorganic.
5. English terminology and rendering of texts related to the Biomedical Laboratory (Study of instruments used in laboratory medicine. Sterilization methods; laboratory safety).
6. English terminology and rendering of scientific texts related to Experimental animals.
7. English terminology and rendering of scientific texts related to biochemistry (Carbohydrates, fats, vitamins, hormones, amino acids, nucleic acids, proteins, enzymes). Clinical chemistry (Blood Sugar, urea, uric acid, cholesterol, triglycerides, lipids, HDL cholesterol, LDL cholesterol, transaminases, alkaline phosphatase, lipids, vitamins, hormones, medicines, toxic substances).
8. English terminology and rendering of scientific texts related to Immunology (Pathogenicity, hypersensitivity, tissue destruction, antibodies, agammaglobulinemia, antigen-antibody interaction, vaccines, antisera).
9. English terminology and rendering of scientific texts related to general microbiology (Biochemistry and physiology of microorganisms, viability and classification of microorganisms. Prokaryotic and eukaryotic microorganisms, bacteria, viruses, fungi, algae, parasites). Clinical Microbiology (Morphological classification of bacteria, isolation micro-organisms, Methods of culture and isolation of bacteria, culture materials, colonies, staining methods).
10. English terminology and rendering of scientific texts related to molecular biology, biotechnology, and genetics.
11. English terminology and rendering of scientific texts related to histology, embryology, cytology, histopathology.

12. English terminology and rendering of scientific texts related to hematology (Origin of blood cells, cell composition and morphology of blood. Techniques in hematology. Anemias and polycythemias). Blood Bank (Requirements for the protection of the donor and recipient. Blood collection methods. Preparation and use of plasma, infectious agents).

13. English terminology and rendering of scientific texts related to Body Fluids (Urine, CSF, Joint-Peritone-Pleuritic Fluid), feces, semen).

14. English terminology and rendering of scientific texts related to computer science.

4. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD	In suitably equipped teaching rooms.
USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES	• The course is completely computerised in the form of Powerpoint, Web linking, videos, images, etc • Language exercises in English terminology on the above topics and translations of scientific articles.
TEACHING ORGANISATION	

Activity	*Work Load*
Lectures (direct)	20
Study and bibliography analysis	10
Individual work	20
Autonomous study	10
Total contact hours and training	***60***

STUDENTS EVALUATION	**I.** Written/oral final examination of various grades of difficulty, based on the lectures offered, containing: - Questions of multiple choice. - Questions of theoretical knowledge. - Problems based on lecture material. **II.** Individual work **III.** Presentation of individual work.

5. BIBILIOGRAPHY

- Elli Terzoglou: Exercises to Reviewing English Grammar, Elli Terzoglou Edt., 1991

- Dorland's: Medical Vocabulary. English-Greek &Greek-English., Broken Hills Publishers,

2002

9.3. 3rd Semester

COURSE OUTLINE

13. GENERAL

SCHOOL	**Health & Care Professions**		
ACADEMIC UNIT	**Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**3011**	**COURSE SEMESTER**	**3rd**
COURSE TITLE	**PHARMACOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**3**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**General Background (GB)**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC356/

14. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which

the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

It is the basic introductory course to the study of Pharmacology.

This course aims at providing students with knowledge concerning the General principles of pharmacology, data on Pharmacodynamics - Pharmacokinetics, prescriptions and study of special pharmacology. The objective of the course is to familiarize students with data on the effect of certain types of drugs, such as Analgesics - Anti-inflammatory, antidiabetic, Sera - Vaccines, immunoglobulins, chemotherapeutics, antineoplastic etc.

Upon successful completion of the course the students will be able to understand: –The mechanism of action of drugs

–Their interactions with the biological substrate

– The applications in the prevention, diagnosis and treatment of the disease

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Working independently
- Team work in an international environment

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Adapting to new situations
- Showing social, professional and ethical responsibility

15. SYLLABUS

COURSE CONTENT

1. Basic principles of Pharmacokinetics (absorption from the skin and mucous membranes, distribution, metabolism, excretion), Pharmacodynamics-Mechanisms of action, Adverse effects, Overdose-Toxicity.

2. Forms and routes of administration, Pharmacokinetic-Pharmacodynamic data, Conjugation, Therapeutic index, Toxicity.

3. Release, absorption, bioavailability, bioequivalence, distribution, protein binding, Pharmacokinetic models, Skin absorption, Lipophilia, Transdermal absorption studies.

4. Drug Metabolism, Cytochrome P450. Genetic factors affecting metabolism. Pharmacogenetics/Pharmacogenomics. Drug excretion, half-life.

5. Gastrointestinal drugs (antacids, proton pump inhibitors, histamine receptor blockers).

6. Medicines for angina, myocardial infarction and coronary syndromes, heart failure, Antihypertensives, *Lipid*-Lowering Agents, Antiplatelets, Anticoagulants, Antiasthmatics).

7. Drugs of the Nervous System (Antiepileptics, Migraines, Multiple Sclerosis, Parkinson's disease, Antipsychotics, Antidepressants, Anxiolytics, Hypnotics.

8. Antimicrobials – route of administration (antibacterial, antitubercular, antifungal, antiviral).

9. Medicines for endocrine diseases (pancreatic, thyroid, obesity, bone metabolism, pituitary and adrenal cortex).

10. Anti-inflammatory (steroidal and non-steroidal).

11. Hormonal contraceptive drugs, Hormone replacement, Anti-estrogens, Anti-androgens

12. Anticancer drugs, Adverse effects of anticancer drugs, Chemotherapy, Immunotherapy

13. Narcotic analgesics

16. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face in lecture hall
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of I.C.T. in Teaching and laboratory education for the

<table>
<tr><td>Use of ICT in teaching, laboratory education, communication with students</td><td>slide show screen and course presentation and
• use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments.</td><td>70</td></tr>
<tr><td>Self study. Writing a paper</td><td>20</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final examination (100%)

Essay questions

Multiple choice questions

Short answer questions</td></tr>
</table>

17. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

1. Επίκαιρα θέματα Φαρμακολογίας 2014, Βενετίκου Μ. , Ιατράκης Γ., Καρίκας, Εκδόσεις Ζεβελεκάκης
2. Η Φαρμακοκινητική με απλά λόγια BirkettD., Εκδόσεις Παρισιάνος, 2005
3. Φαρμακολογία Θεοχαρίδης Θ.Κ., Ιατρικές Εκδόσεις Λίτσας, Αθήνα 2000
4. Χανιώτης Φαρμακολογία, Εκδόσεις Λίτσας, Αθήνα 2012
5. Εγχειρίδιο φαρμακολογίας LullmanH., MohrK., ZieglerA., BiegerD. Ιατρικές Εκδόσεις Λίτσας, Αθήνα 2005

In Foreign language

6. Concepts in Clinical Pharmacokinetics Piro J., Blouin R., Pruemer J., ASHP 1998
7. Clinical Pharmacokinetics, Rowland M., Tozer T.N., LEA –FEBIGER, Philadelphia 2000

Basic Clinical Pharmacokinetics, Winter M, Lippincott Williams-Wilikins, 2003.

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	**3021**	**SEMESTER**	3rd
COURSE TITLE	RESEARCH METHODOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	4	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC292/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

On successful completion of the course students will have acquired all the basic concepts of research methodology in the field of health sciences. Hence, they will be equiped to plan clinical and epidemiological studies and write and submit scientific papers to international journals. In particular, they will be able to:

- Understand the methodology of analysis in matters of medical research and clinical practice
- Participate in all phases of a research protocol applying modern laboratory techniques and disseminate the results
- Write scientific articles and communicate them to both specialist and non-specialist audiences
- Describe basic approaches to qualitative research. These methodologies include, but are not limited to, case studies, indepth interviews and focus groups.
- Identify and critique articles based on different research methods
- Construct a questionnaire relying on several types of questions

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Exercise criticism and self-criticism • Mathematical thinking and analysis • Decision Making • *Search, analyze and synthesize data* with the use of the necessary technology • Autonomous work • Production of free, creative and inductive thinking	

(3) **SYLLABUS**

Theory

The course is designed for a set of 13 weeks of lectures. The topics that will be discussed are the following

- Introduction to Research in Health Sciences
- Principles in Data Analysis
- Questionnaire Design
- Sampling
- Prevalence Studies, Prospective - Cohort Studies
- Reprospective – Case Control Studies
- Clinical Trials
- Relative Risk
- Odds Ratio
- Meta-Analysis
- Data bases in the area of health sciences (Pubmed, Scopus, etc)
- Publication Indexes
- Review

(4) **TEACHING and LEARNING METHODS - EVALUATION**

DELIVERY *Face-to-face, Distance learning, etc.*	Face to Face session in classroom and lab	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Web search (literature review and data sources) • Utilization of E-class UNIWA platform (file exchange among professors and students) • Email • Specialized statistics software • Power Point Presentations	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	60
	Study of solved exercises	15
	Exercises to be solved	30
	Self - Study (bibliography)	15
	Course total	*120*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	During the semester students will be given problems-exercises which together with the material of the lectures will be an aid for the preparation of the final exams. In particular in the case that the students work in a given problem (by themselves or in a small group), they will present it (40% of the overall grade) and participate in the final written exams (60% of the overall grade)

(5) ATTACHED BIBLIOGRAPHY

A. **Greek**

11. Βιοστατιστική και Εφαρμογές Παπαγεωργίου Έφη ΕΚΔΟΣΕΙΣ ΝΕΩΝ ΤΕΧΝΟΛΟΓΙΩΝ ΜΟΝ. ΕΠΕ Κωδ. Ευδόξου 41962286
12. Δαρβίρη, Χ., Μεθοδολογία έρευνας στον χώρο της Υγείας. Εκδόσεις Πασχαλίδης, 2009.
13. Ιωαννίδης, Ι., Αρχές Αποδεικτικής Ιατρικής, εκδόσεις Λίτσας. (2002).
14. Λυκερίδου Α., Αβραμιώτη και συν, Μεθοδολογία έρευνας στην υγεία- μελέτη της υγείας και των υπηρεσιών υγείας Εκδόσεις Broken Hill, 2014. Petrie Aviva,Sabin Caroline, (2008) Ιατρική Στατιστική με μια ματιά. Εκδόσεις Παρισιάνος. Αθήνα.
15. Pagano Marcello, Gauvreau Kimberlee (2002) Αρχές Βιοστατιστικής Γ.ΠΑΡΙΚΟΣ & ΣΙΑ ΕΕ.
16. Κατσουγιαννόπουλος Βασίλειος, (2009) Βασική Ιατρική στατιστική ΕΚΔΟΤΙΚΟΣ ΟΙΚΟΣ ΑΔΕΛΦΩΝ ΚΥΡΙΑΚΙΔΗ Α.Ε.
17. Σταυρινός Βασίλης Γ., Παναγιωτάκος Δημοσθένης Β. Βιοστατιστική, Εκδόσεις Γ. Δαρδάνος - Κ. Δαρδάνος Ο.Ε.
18. Παναγιωτάκος. Δ.. Μεθοδολογία της Έρευνας και της Ανάλυσης Δεδομένων, για τις Επιστήμες της Υγείας, Εκδόσεις ΔΙΟΝΙΚΟΣ ε.π.ε., Αθήνα. (2011).
19. Πατρινός Γ. και συν: Μοριακή Διαγνωστική. Εκδόσεις Παρισιανού, 2005.

English

6. Laake & Benestad & Olsen, Research methodology in the medical and biomedical sciences. Elsevier 2007.
7. Monsen R.E. (1992). Research: Successful Approaches, The American Dietetic

Association

8. Supino et al. (editors). Principals of research methodology A guide for clinical investigators. 2012
9. Wilhelm A. et al., Molecular Diagnostics. Elsevier 2009, (second edition).

COURSE OUTLINE

1. GENERAL

SCHOOL	Health & Care Professions		
ACADEMIC UNIT	Biomedical Sciences		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	3031-3032	COURSE SEMESTER	3rd
COURSE TITLE	FIRST AID		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	WEEKLY TEACHING HOURS	CREDITS
Lectures / Exercises	2	4
Laboratory	2	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	General Background (GB)
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC160/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

First Aid is without doubt a useful subject, not only for students, but also for the general public, since emergency incidents in the streets, at work or at home that require assistance have recently been on the increase. The aim of this course is to teach the student in a scientific yet simple way how to use available means to provide care to patients or injured people in sudden life-threatening situations. The course aims to contribute to the preservation of human life—the best reward for attending the course.

After completing the course the students would be able to:

- Provide first aid in specific situations (e.g. drowning, choking) if necessary.
- Provide first aid to a collapsed victim (BLS/AED).
- Treat a patient in an organised hospital unit or outpatient clinic.
- Know how to use simple objects/instruments to provide first aid.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical

Working independently	*responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Working independently
- Team work in an international environment
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Adapting to new situations
- Showing social, professional and ethical responsibility

3. SYLLABUS

Theoretical – Teaching Units

1. Introduction, aims of first aid, first steps, assessment of the patient, examination and removal of clothes.
2. Injury due to mechanical causes, abrasion, contusion, trauma, fracture, dislocation, sprain, cranium fracture, facial fracture, spinal column fracture, extremities fracture, road accident injury, beating, biting.
3. Haemorrhage. Types of haemorrhage, clinical presentation, first aid. Haemorrhage from various organs, abnormal haemorrhage (rhinorrhagia, otorrhagia, gastrorrhagia, haemoptysis, varicose/haemorrhoids). Haemostasis, first aid.
4. Foreign bodies. Foreign body in the skin (spiculae, hooks), the eye, the nose
5. the ear, swallowing a foreign body.
6. Injury due to natural causes. Heat (burn, heatstroke), cold (frostbite, perniosis), sun, sunstroke, electricity (electrocution, lightning strike), irradiation, drowning, choking,

crash syndrome.

7. Burns (types, classification, clinical presentation, first aid).

8. Abnormal signs that necessitate first aid. Pulse, pain (headache, toothache, earache, abdominal pain, fever, diarrhoea, vomiting, fainting, loss of consciousness, shock, coma, stroke, epilepsy, spasms, allergic reactions, bronchial asthma exacerbation, heart attack, angina).

9. Introduction to artificial breathing and cardiopulmonary resuscitation (CPR). Basic life support (BLS) for adults. Position for resuscitation. Basic life support for children and infants.

10. Use of automated external defibrillator in conjunction with basic life support in adults, children and infants (AED & BLS).

11. Bandages, types and varieties. Triangular bandages, head bandages, bandages for the upper extremity, the chest, the hand and foot, the mandible, the knee and elbow. Cylindrical bandages: wrist and upper extremity. Figure-eight bandaging of the elbow, the upper extremity, the fingers and the foot. Bandaging the head and the eye. Reticular bandages. Splints.

12. Carrying a patient. Stretchers, deploying a stretcher, placing a patient on the stretcher, other types of stretchers. Carrying the patient or injured person, carrying on a stretcher, with the hands, on the shoulders, transfer to vehicle.

13. Poisoning and antidotes, signs and symptoms of poisoning, first aid after poisoning, removing and neutralising the poison.

14. Injections. Oxygen and its use. Rationale of indicative risk signs, protection, and rescue. Chemicals and food additives. Contents of a First Aid kit.

The laboratory part of the course aims at giving the students practice in the above, on an adult and a child model (bandages, injections, basic life support, use of automated external defibrillator).

1. Clinical examination and evaluation of the patient's condition. First steps, assessing the patients, examination and removal of clothes. Application of first aid for abnormal signs that necessitate immediate care: Pulse, pain (headache, toothache, earache, abdominal pain), fever, diarrhoea, vomiting, fainting, shock, loss of consciousness, coma, stroke, epilepsy, spasms, heart attack, angina, abnormal haemorrhage (rhinorrhagia, otorrhagia, gastrorrhagia, haemoptysis, varicose, haemorrhoids).

2. Introduction to artificial breathing and cardiopulmonary resuscitation (CPR). Adult CPR application. Practice in basic life support (BLS) for adults and placing the patient in the

recovery position.

3. Child and infant CPR. Practice in basic life support (BLS) for adults and placing the patient in the recovery position.

4. Resuscitation's position.

5. Use of an automated external defibrillator. Practice in correct and safe use of automated external defibrillator in conjunction with basic life support (AED & BLS).

6. Integrated repetition of CPR.

7. Transfer of the injured patient. Practice in the use of stretchers, in positioning the victim on the stretcher, other types of stretchers. Carrying the patient or the injured person, transfer in a stretcher, carrying in the arms, on shoulder or by vehicle.

8. Bandages and splints. Immobilization of bone fractures. Practice in the application of bandages, types of bandages. Triangular bandages: bandaging the head, the upper extremity, the chest, the hand, the foot, the mandible, the knee and the elbow. Cylindrical bandages: bandaging the wrist and the upper extremity. Figure-eight bandaging of the elbow, the upper extremity, the fingers and the foot. Bandaging the head and the eye. Reticular bandages. Splints.

9. Treatment of injury-burn. Ischemic ligature. Haemostasis. Application of techniques for countering haemorrhage.

10. First Aid in injuries caused by a) mechanical and b) physical agents, drowning, choking (Heimlich operation), electrocution, thunderstruck. c) Foreign body in the skin (spiculae – hooks), the eye, the nose, the ear, swallowing a foreign body. Application of techniques. d) First aid in poisoning, signs and symptoms of poisoning, removal and neutralisation of the poison, special treatment and antidotes

11. Manner of management of car accidents, attitude in fires, earthquakes and others mass disasters.

12. Basic principles for medications injection. Preparation of home and car first aid-kit. Oxygen and its use. Practice in giving injections and in the application of the oxygen mask.

13. Laboratory examinations of the semester (spring). Oral or writing type examination according to the judgement of the professor of the academic course.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face in lecture hall

<table>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation and

use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments. Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), first aid images, questionnaires, tutorials, study and analysis of bibliography.</td><td>50</td></tr>
<tr><td>Laboratory Exercise, Field Exercise, in small groups of 20-25 students.</td><td>50</td></tr>
<tr><td>Independent study</td><td>20</td></tr>
<tr><td>Course total</td><td>120</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of</td><td>Theory

Writing Final Examination (100%) which includes:

Short answer questions

Laboratory

Continuous evaluation of the students in laboratory practice exercises.

Oral examination with exercises upon an adult model</td></tr>
</table>

patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Baltopoulos G. First Aid. Athens: Medical Editions, P.X. Paschalides,2001.
2. Petridis A., Eftichidou EP, Tsohas K. First Aid. Athens: Medical Editions, P.X. Paschalides, 2012.
3. First Aid of British Red Cross. Athens: Medical Editions Litsas, 2010.
4. Schua S. Textbook of Emergency incidents. Athens: Medical Editions Parisianou SA, 2006.
5. Emergency Medicine with colored images. Knoop Kevin J., Lawrence Stack B., Storrow Alan B., Paschalides–Broken Hill, Athens 2008
6. Emergency Medicine. 2nd edition.American Academy of Orthopaedic Surgeons–Broken Hill 2014
7. Serafim Nanas: First Aid-Prehospital Medicine-Cardiopulmonary Resuscitation. Editions Parisianos 2013
8. American Red Cross. Textbook of first aid fast. American National Red Cross, 2003.
9. Jones & Bartlett Learning. Emergency Care and transportation of the sick and injured. NY: American Academy of Orthopaedic Surgery, 2010

-Related academic journals:

1. Emergency Medicine: Open Access, ISSN: 2165-7548, USA
2. Journal of Bone and Joint Surgery, Online ISSN: 1535-1386, USA
3. Journal of Aquatic Rescue and First Aid , (FEGUI), ISSN 1579-0347, Spain
4. Resuscitation Journal, ISSN: 0300-9572, UK
5. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine: Open Access, ISSN: 1757-41

6. Critical Care and Resuscitation Journal, ISSN: 1441-2772, Australia

Specific instructions (guidelines) from international scientific organisations:

1. Stewart RM, Rotondo MF. Advanced Trauma Life Support in Adults (ATLS), 2018.
2. International Federation of Red Cross and Red Crescent Societies (IFRC). International First Aid and resuscitation guidelines. Geneva 2016.
3. European Resuscitation Council Guidelines for Resuscitation 2015, Resuscitation 95: 1015: 81-98.
4. European Resuscitation Council Guidelines for Resuscitation 2015, Resuscitation 95: 2017 update Resuscitation 123(2018): 45-50.

(1) GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**3041**	**SEMESTER**	**3rd**
COURSE TITLE	**General Microbiology**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		4	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background Course - Mandatory		
PREREQUISITE COURSES:	–		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/		

(2) **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of*

Aim of the course:

The course's theoretical syllabus aims to the comprehension of the 'microcosm' and its reaction with the 'macrocosm' and human. An introduction to the evolution of Microbiology field is occurring as well as a historical throwback to the most important discoveries. The microorganisms' variety and structure and the function of the bacterial/viral cells is described, along with the evolution of bacteroides, bacteriophages, plasmids and viruses' basic genetic systems. It is completed with an introduction to antibiotics and the genetic structure of the bacterial antibiotic resistance mechanisms as they grow and the means to measure and control the antimicrobial resistance.

Objectives and expected learning outcomes:

Upon completion of the course, students will be able to know and understand:

- The Epidemiology meaning and the most known diseases caused by bacteria, viruses, fungi and parasites.
- The microorganisms' role in food production and conservation and their ability to cause infections transmitted by food (foodborne diseases).
- The development of theoretical and practical skills in planing and executing experiments.
- How to use general texts, reference books and series of other sources in order to acquire further knowledge during the abiding independent knowledge.
- The way of developing a research study either individually or in teams (searching for related bibliography, evaluating data and writing).

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations Decision-making

Working independently
Team work

Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others…

- Search, analyze and compose data and information, using the appropriate technology.
- Work individually
- Work in Teams
- Work in interscientific environment
- Work at international environment
- Provide new scientific ideas
- *Promote free, creative and inductive thinking*

(3) **SYLLABUS**

Lectures:

1. **Introduction to Microbiology**: Microorganisms. Microorganisms and Microbiologists. Brief historical evolution of Microbiology. The contribution of the microorganisms on Earth. Constitutive biochemistry of the microbial cell. Classification-Nomenclature. Microbial cell (Prokaryotic and Eukaryotic). Differentiation. General characteristics of bacteria-viruses-fungi-parasites.
2. **Microbial Genetics**: Bacterial genome. Parasites-Fungi. Gene expression and regulation. The role of the microorganisms in Genetic Engineering. Genetic recombination and transformation techniques.
3. **Viral Genetics and Plasmids**: Bacterial and Fungal plasmids. Bacterial viruses: Bacteriophages or Phages. Plant/Animal viruses. Association of viruses, plasmids and other transposable elements. Oncoviruses. Viruses/Viroids classification.
4. **Microbial nutrition, growth and movement**: About microorganisms' nutritional demanding. Microorganisms' categories according to their feeding strategies. Microbial nutritional media. Microbial growth in closed and open environment-Continuous culture. Specialized microbial techniques for growing microorganisms in lab. Sterilization, disinfection, antisepsis.
5. **Microbial Ecology and Variety**: Symbiotic relationships of microorganisms and microbial habitats. Pathogens. Carbon, hydrogen, oxygen, nitrogen, sulfur, phosphorus, ferrum and other compounds fixation. The role of the microorganisms to the procedures mentioned above. The existence of potentially pathogenic microorganisms in liquid and solid habitats/Food. Biomembranes - Formation of biomembranes, abilities, pathogeny.
6. **Introduction to Virology**: Viral Structure and Classification. Cell infection and ways of viral multiplying. Animal viruses (e.g. Adenoviruses, Retroviruses), plant viruses (e.g. Tobacco Mosaic virus), bacterial viruses (e.g. Phage T4, Phage λ). Viral infections (e.g. HIV-1, Hepatitis viruses, Papilloma viruses). Mechanisms of viral pathogenesis, viruses and cancer, laboratory diagnosis, antiviral compounds.
7. **Introduction to Mycology**: Classification, cellular structure, genetics, mechanisms of pathogenesis. The most important infections and their treatment.
8. **Introduction to Parasitology**: Classification, cellular structure, genetics, mechanisms of fungi pathogenesis.
9. **Microorganisms and diseases/infections**: Infection definition and characteristics. Pathogens and potentially pathogens/Symbiotic and pathogenic flora. Infection sources. Transmission and spreading modes. Hospital acquired infections and community infections. Detection of infections in modern laboratories. Treatment techniques (vaccines) and surveillance of an infection.
10. **Laboratory detection and isolation of microbes**: Microscopic examination/Staining, serology tests, Film Array system in detection of microorganisms in biological samples. Molecular examinations/ PCR applications in laboratory detection of bacteria, viruses, parasites.
11. **Molecular-Biochemical identification**: Classical biochemical identification (API system, biochemical procedures e.g. catalase test, KOH, etc), Molecular identification by detecting conserved genes, viruses, parasites. Real Time PCR applications.
12. **Molecular sensitivity to antibiotics**: Introduction to antibiotics, chemotherapeutic agents, antiseptic agents, disinfectants. Introduction to anti-fungi and anti-viral therapies. Commonly used antibiotics and their history. Antibiogram. Bacterial resistance mechanisms and their general basis. Record and control microbial tolerance. Antiviral

agents. Antifungal and antiparasitic drugs.

13. **Introduction to Hygiene, Microbial Epidemiology and their applications in Public Health**: Definition of epidemiology and epidemic strain. Reference to epidemic incidents according to modern bibliography (Disease case histories) and the impacts on Public Health. Epidemic control (Risk Evaluation, Disease Management). Phylogeny's role in Epidemiology evolution.

(4) **TEACHING and LEARNING METHODS - EVALUATION**

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures at the amphitheater/lecture room
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the ability of presentation with the application of the Power Point or other relevant program Program. • Internet connection • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department to communicate and notify the students • Use of the e-class web page of the course to post and handle useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures	52
Laboratory exercises	0
Interactive Teaching	6
Bibliography study and analysis	24
Study preparation	13
Written assignment	24
Educational visits/excursions	0
Independent study	24
Course total	120

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	1. Final writing exam (60%) which includes: Multiple choice questions Quick Answer Questions Essay Tests Judgment questions, theory comprehending and evaluation of reasoning Problems Solving The students after receiving their exam topics they are informed about the method of assessment for each group of topics, depending on the degree of difficulty and it is also taken under consideration the thoroughness, articulacy, critical thinking and the language efficiency of the answer given.

	2. Assignment Presentation (40%) Theory is examined at last, however, in case of accomplishing an individually or team project, its evaluation can be involved in the final course's degree up to 40%.

(5) SUGGESTED BIBLIOGRAPHY

A. ***In Greek***

1. Intro to Microbiology (translated in Greek), 2nd edn, Tortora Gerard, Funke Berdell, Case Christine, BROKEN HILL PUBLISHERS LTD
2. Megical Microbiology (translated in Greek), Greenwood D., Slack R., BROKEN HILL PUBLISHERS LTD
3. General Microbiology, 1st edn, Athena Mavridou, BROKEN HILL PUBLISHERS LTD, 2011
4. Microbes and human, 1st edn, Steliow Chatzipanagiotou, Nicolaos-Stefanos Legakis, EKATERINA LOUKISA PUBLICATIONS, , 2013
5. Microbiology (translated in Greek), Mims Cedric A.,Playfair J.,Roitt I.,Wakelin D.,WIlliams R., BROKEN HILL PUBLISHERS LTD

B. In English

1. Mark Gladwin, William Trattler, C.Scott Mahan. Clinical Microbiology Made Ridiculously Simple. 6th edn. Medmaster 2014
2. Warren Levinson. Review of Medical Microbiology and Immunology. 13th edn. Lange Medical Books. 2014
3. Franklin T J, Snow G A. Biochemistry and Molecular Biology of Antimicrobial Drug Action. 6th edn. Springer, New York. 2007

9.3.1 Optional Elective Courses of 3rd Semester for the Divisions

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
DIVISION	Dental Technology		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	3051	SEMESTER	3rd
COURSE TITLE	PHYSIOLOGY OF THE STOMATOGNATHIC SYSTEM		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS (ECTS)
LECTURES	3	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background, special background, specialisedgeneral* *knowledge, skills development*	Compulsory Elective Specific Background Course (CESBC)
PREREQUISITE COURSES:	PHYSIOLOGY, ANATOMY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.teiath.gr/courses/DENT103/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

After the end of the course students will be able:

- To know the anatomy and physiology of the structures that make up the Stomatognathic system.
- To know the normal function of the Stomatognathic system.
- To know the conditions for the construction of a prosthetic restoration in order for the Oral and Maxillofacial system to function safely.

Students will learn the anatomical structures and the physiological mechanisms of the Stomatognathic System and the way they are interconnected so that the primary and secondary functions of the system take place.

The purpose of teaching the course "*Physiology of the Stomatognathic System*", is to acquaint the student with the individual systems that make up the oral and maxillofacial system and how they work together, so that the main and secondary functions of the system are performed.

The aim of the course is:

- The analytic description of the parts that make up the Stomatognathic System and the understanding of their operating mechanisms.
- Learning the kinesiology of the lower jaw.
- Teaching the working mechanisms of chewing, swallowing and speech.
- Teaching the essentials of stomatognathic pathology; associating pathological conditions of stomatognathic system with poorly made dental prostheses.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Team work • Search, analysis and synthesis of data and information, using the necessary technologies	

3. SYLLABUS

1. Anatomy of the Stomatognathic system: The bones and muscles of the oral and maxillofacial system are described.
    1. Detailed description of the anatomical morphology of the basic bones of the oral system, the upper and lower jaw, and their anatomical features that are involved and require special attention during the construction of a prosthetic restoration.
    2. The muscles of the oral and maxillofacial region are described with emphasis on the activity of the elevators and depressors muscles of the mouth, so as to make a connection with the kinesiology of the lower jaw. The function of the masticatory muscles is extensively analyzed.
2. Elements of embryology and anatomy of the Temporomandibular Joint structure (TMJ). Evolution of TMJ. Embryological stages of TMJ development. Detailed description and analysis of the individual anatomical elements of the temporomandibular joints that connect the lower jaw to the skull and allow its functional movements. Description of the operation of the TMJs and their

dysfunctional disorders.

3. Anatomical features of the oral area and oral cavity: A brief description of the anatomical features involved in shaping the oral cavity (floor of the mouth, soft and hard palate, and tongue). Description of the supporting tissues of the teeth, presentation and analysis of the normal position and arrangement of the teeth in the jaws. Description of some anatomical elements of the oral area that participate in the aesthetics of the face.

4. Physiology of the Nervous and Muscular System: Understanding the mechanisms of cooperation of the various systems of the Oral System to perform its complex functions, requires a thorough knowledge of both the nervous and muscular system and neuromuscular coordination. The structure of the striated skeletal muscles and their function are analyzed. The main proprioceptive organs of the oral system are presented. The neuromuscular function is extensively described and analyzed in order to understand the mechanisms of cooperation of the various systems of the stomatognathic system. The main reflexes of the lower jaw are mentioned.

5. Mandibular kinesiology: The purpose of the chapter is to familiarize the student with the movements that can be performed by the mandible. A connection is made with the muscles responsible for each movement. This section analyzes the movements of the mandible in three levels, horizontal, frontal, sagittal. The basic positions of the lower jaw are analyzed, such as the Central Relationship, the Resting Position, the Maximum Intercuspation and the Centric Occlusion. The maximum positions and patterns of movements of the mandible during opening, closing, protrusion and laterotrusion, in all three reference levels, are described.

6. Chewing, Swallowing, Speech: The three main functions of the Stomatognathic system are described in detail.

    a) The masticatory function (stages of chewing) and the various phases of the movements of the lower jaw during a masticatory cycle are analyzed. The characteristics of the masticatory forces are presented.

    b) The three phases of the swallowing function are analyzed with special emphasis on the oral phase for the determination of the position of the competing teeth, the tongue and the Temporomadibular Joints.

    c) For the function of speech, the effect of the inclination of the teeth on the pronunciation of various sounds and letters is analyzed.

7. Oral Dysfunction: Etiology, Epidemiology, Classification, Dental treatment methods. After the student has known the various parts of the Oral System and their function, he is taught basic elements of the pathology of the system, more in the light of his own participation in the creation of the pathology.

8. **TEACHING and LEARNING METHODS- EVALUATION**

DELIVERY	*Face-to-face,*

Face-to-face,Distancelearning,etc.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation,* *communicationwithstudents*	

TEACHING METHODS *The manner and methods ofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements, clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	*Activity*	*Semester workload*
	Lectures	60
	Power point presentation of work	20
	Educational visits / workshops / conferences	10
	Coursetotal	*90 hours*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoice questionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient, artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	**1.** Written final exam (80%) which includes: •Multiple choice questions • Short Answer Questions • Development questions • Questions of judgment, understanding of theory and evaluation of way of thinking Students, when given the topics, are informed about how to evaluate each group of topics, depending on their degree of difficulty and take into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency. **2.** Presentation of Teamwork (20%) The theory is examined in the final exam, while in case of individual or group work, the degree of the latter participates in a percentage of up to 20% in the

	formation of the degree of the theory. Checking the writing test by the student

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek

1. Δρούκας Β.: Λειτουργία και Δυσλειτουργία του Στοματογναθικού Συστήματος. 3η έκδοση. Επιστημονικές Εκδόσεις Παρισιάνου. Αθήνα 2008.
2. Τζάκης Μ.: Φυσιολογία του Στοματογναθικού Συστήματος και Σύγκλειση. 3η Εκδοση. Οδοντιατρική Σχολή ΕΚΠΑ. Αθήνα 2015.
3. Γαρέφης Π.: Ακίνητη Προσθετική. Λειτουργία και αισθητική στις μεταλλοκεραμικές και ολοκεραμικές αποκαταστάσεις. Κλινικές διαδικασίες. Συνεργασία με το οδοντοτεχνικό εργαστήριο. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2013.
4. Rosenstiel FS., Land MF., Fujimoto J. (Μετάφραση: Κοΐδης Π. Θ): Σύγχρονη ακίνητη προσθετική. Οδοντιατρικές Εκδόσεις Μπονισέλ. Αθήνα 2012.
5. Gurel G. (Μετάφραση: Συκαράς Σ): Επιστήμη και Τέχνη των Όψεων Πορσελάνης. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2010.
6. Wassell R, Naru A, Steele J, Nohl F. (Μετάφραση: Γαρέφης Π): Σύγκλειση. Από τη θεωρία στην καθημερινή οδοντιατρική πράξη. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2010.
7. Τσόλκα Π. Φυσιολογία Στοματογναθικού Συστήματος - Συγκλεισιολογία. Ενότητες 1-12. Έκδοση: 1.0. Αθήνα 2014. Διαθέσιμο από τη δικτυακή διεύθυνση: https://ocp.teiath.gr/courses/DENT_UNDER104/

English

1. Gross M.: The Science and Art of Occlusion and Oral Rehabilitation. Quintessence Publishing Co,Ltd. London 2015.
2. Belafsky PC, Coffey M, Costello D, Gilman M, Lewis N, Sumida Y. 3D Anatomy for Speech Language Pathology. Published by Primal Pictures L.t.d. 2010.
3. WheelerR.: Dentalanatomy, physiology and occlusion. WB Saunders Co. Philadelphia, London, Toronto, 1974.
4. Zarb G.A., Carlsson G.E.: Temporomandibular Joint. Function and Dysfunction, Munksgaard. Copenhagen 1979.
5. DeBrul E.: Sicher's oral anatomy. 7th ed. The CV Mosby Co. St. Louis. Toronto, London 1980.
6. RamfjordS, AshMM. Occlusion. 3rded. W.B. SaundersCompany. Philadelphia. 1983.
7. Dawson P.: Evaluation, Diagnosis and Treatment of occlusal problems. Mosby. St. Louis 1989.

8. Thomson H.: Occlusion. Wright. London 1990.

9. Okeson J.:Management of Temporomandibular disorders and occlusion. 4th ed. Mosby. St. Louis 1998.

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3052	SEMESTER	3th
COURSE TITLE	ANATOMY OF THE EYE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the* *course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3
Add rows if necessary. The organization of teaching and the teaching *methods used are described in detail at (d).*		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background / SBC/CE
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

2. LEARNING OUTCOMES

Learning outcomes *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.* *Consult Appendix A* *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* *Guidelines for writing Learning Outcomes*
Upon successful completion of the course the student will be able to: • to understand the basic anatomical points of the organ of vision. • be familiar with the mechanism and function of the human eye • to know the anatomy of the eye and to understand issues related to the optics of the eye.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking

Working in an interdisciplinary environment Production of new research ideas	…… Others… …….
• Working independently • Team work	

3. SYLLABUS

- Eye socket, functions - dimensions, axes, structure - the bones of the orbit, the walls, position and contents.
- Macroscopic anatomy of eyelids (dimensions -tissues - shape - epicanth), structure (skin - muscles - bulbous conjunctiva), glands (meibomian, moll, zeiss, wolfring) eyelids, eyelid movements, eyelid
- Tear film (macroscopic anatomy, histology), tear apparatus structure,
- Conjunctiva, sclera, cornea, iris parts, choroidal, aqueous and vitreous, crystalline lens, retina

4. TEACHING and LEARNING METHODS- EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc.</td><td colspan="2">Face to face.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td colspan="2">Delivery of the syllabus is supported by e-class.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>Activity</td><td>Semester workload</td></tr>
<tr><td></td><td>Lectures</td><td>39 hours</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Self-study</td><td>61 hours</td></tr>
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<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Course total</td><td>90 hours</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td colspan="2">Written assignment 100%</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Clinical anatomy principles – Lawrence H. Mathers, Jr. [et al.]. St. Louis: Mosby, 1996

2. The Wills eye manual – office and emergency room diagnosis and treatment of eye disease. – Philadelphia : Lippincott, 1994

3. Principles and practice of ophthalmology – basic sciences / [edited by] Daniel M. Albert, Frederick A. Jakobiec. – Philadelphia : Saunders, 1994

4. Colour atlas of ophthalmic plastic surgery – A.G. Tyers, J.R.O. Collin ; illustrations by Terry R. Tarrant. – Edinburgh ; New York : Churchill Livingstone, 1995

5. More than meets the eye – an introduction to media studies / Graeme Burton. – London ; New York : Arnold ; New York : Distributed exclusively in the USA by St. Martin's Press, 1997

6. The reconfigured eye – visual truth in the post-photographic era / William J. Mitchell. – Cambridge, Mass. : MIT Press, 1992.

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
DEPARTMENT	**Biomedical Sciences**		
ACADEMIC UNIT	**AESTHETICS & COSMETOLOGY** **RADIOLOGY & RADIOTHERAPY** **MEDICAL LABORATORIES**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**3053**	**COURSE SEMESTER**	**3rd**
COURSE TITLE	**NOSOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**3**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background/Elective Mandatory of Majors: Aesthetics & Cosmetology, Radiology & Radiotherapy, Medical Laboratories
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**

COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE244/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The purpose of the course is for students to understand:

• Basic concepts of health and disease, how to approach diseases, how to evaluate and investigate in nosology as well as the basic symptoms of the main nosological entities.

• In particular, to know the pathology of the main systems and the diseases observed in each of these systems.

• To be able to accurately describe the symptoms of the clinical pictures and understand how the causes led to them.

Upon successful completion of the course, the student will be able to:

• To know the etiological mechanisms that govern the various diseases and their symptoms as well as their evolution.

• Present and contribute to solving diagnostic and therapeutic problems with the cooperation of the medical staff.

The aim is to achieve knowledge of the basic symptoms of diseases and to develop the students' ability to work harmoniously with the medical staff.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Decision-making *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

- Working independently
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking
- Production of new research ideas

3. SYLLABUS

Theory

1. Patho-anatomical evidence (summary). Inflammation-degeneration-apoptosis-necrosis-atrophy-scarring-calcification-hypertrophy-hyperplasia-hypoplasia-regeneration-neoplasia-transformation-metastasis-infiltration-dysplasia-ectopy-hyperemia-congestion-calcification-ischemia-infarction-thrombosis-embolism-agenesis- transplantation-types of skin lesions-complaint-dihidroma-exudation-immunity-allergy-autoimmunity. Changes due to aging, by system (general).

2. International statistical classification of diseases. Concept of health - disease. General causes of diseases (known - unknown etiology). Concept of prevention. Patient approach methodology. Record. Objective examination. Laboratory Tests. Semiotics of diseases (in summary).

3. Concept of infectious disease, epidemic, endemic, hospital infection, opportunistic infection, sexually transmitted diseases. Mainly common adult infectious diseases but especially such as AIDS, Hepatitis, Meningitis, Tuberculosis etc.

4. Main diseases of the respiratory system: Symptoms and appearance. Respiratory failure, Chronic Obstructive Pulmonary Disease (chronic bronchitis, emphysema), bronchial asthma, pleurisy, pneumothorax, atelectasis, bronchiectasis, pulmonary embolism. Importance of smoking in general. Lung cancers, occupational lung diseases.

5. Urinary tract diseases: Symptoms and presentation. Importance of urine test, ways to test

urine, ways to check kidney function. Renal failure (acute-chronic). Glomerulonephritis. Nephrotic syndrome. Cystitis. Pyelonephritis-Urine infection. Polycystic kidneys. Kidney tumors. Urolithiasis. Urethritis. Prostate diseases.

6. Main diseases of the digestive system: Symptoms and appearance. Peptic ulcer, malabsorption syndrome, irritable bowel, ulcerative colitis, diverticular disease, liver and biliary diseases, significance of jaundice, pancreatic diseases.

7. Main blood diseases: Symptoms and appearance. Diseases of red blood cells, white blood cells, platelets. Iron deficiency anemia, megaloblastic anemia, hemoglobinopathies (quantitative - qualitative, homozygous - heterozygous). Leukemias - Lymphomas. Coagulation disorders. Disseminated intravascular coagulation. Haemophilia.

8. Circulatory diseases: Symptoms and appearance. Diagnosis-control methods, international demographic data and differentiation of heart diseases. Prevention of cardiovascular diseases (primary-secondary risk factors). Hypertension. Hypotensive syndrome. Dyslipidemias. Coronary artery disease. Angina pectoris. Myocardial infarction. Myocardial reperfusion. Sudden death. Heart failure. Cardiac cachexia. Acute pulmonary edema. Shock. Pericarditis in general. Infective endocarditis. Valvular diseases – Myocardial diseases. Cardiac arrhythmias. Rheumatic fever. Aortic aneurysms. Heart diseases. Artificial pacing components–defibrillators–prosthetic valves. Athletic heart. Heart transplant. Cardiac Intensive Care and Rehabilitation Unit. Cardiorespiratory arrest and resuscitation. Congenital heart diseases.

9. Rheumatic diseases: Symptoms and appearance. Definition of arthritis. General knowledge about arthritis of various etiologies. Rheumatic disease concept. Concept of immunosuppression. General knowledge of immune mechanisms. Autoimmune diseases and their diagnosis (in general). Collagen diseases or connective tissue diseases. Rheumatoid arthritis, Juvenile rheumatoid arthritis, Seronegative arthritis (Ankylosing spondylitis - Psoriatic arthritis - Reiter's syndrome - Arthritis enteropathies - Behcet's syndrome), Gout. Degenerative joint disease (Osteoarthritis). Osteoporosis. Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis and Polymyositis, Polyarteritis nodosa, Mixed connective tissue disease, Temporal arteritis, Polymyalgia rheumatica.

10. 10. Most frequent endocrinopathy (pituitary, hypothalamus, pineal gland, thyroid, parathyroid, adrenal, gonad, gastrointestinal and pancreatic) Symptoms and appearance. Specifically:

A) Endocrine pancreas Histology and cell biology of the endocrine pancreas. Hormonal regulation and hormonal disruption in endocrine diseases. Symptoms of diabetes mellitus, as well as other pathological entities, such as insulinoma, glucagonoma and somatostatinoma).

B) Diseases of the parathyroid glands and calcium homeostasis (histology of the parathyroid glands, regulation of hormone secretion and disease-related disorders. Symptoms of primary and secondary hyperparathyroidism, familial hypocalciuric hypercalcemia, malignant hypercalcemia, medullary thyroid cancer, osteomalacia. Symptoms of onset and establishment of osteoporosis).

C) Diseases of the hypothalamus and pituitary gland (Histology and cell biology, hormonal actions and clinical manifestations of disorders of the hypothalamus and pituitary gland.

Explanation of the peculiarities of pituitary embryology for a better understanding of the acquired and genetic component of the diseases. Symptoms of pituitary adenomas, hypothyroidism, obesity, diabetes mellitus and syndrome of antidiuretic hormone (SIADH)).

D) Diseases of the thyroid gland (Histology, cell biology, normal and pathological thyroid secretion. Selective pathophysiology of hyperthyroidism, types of hyperthyroidism (especially Graves' disease), hypothyroidism, thyroiditis (especially Hashimoto's), goitre, nodules and neoplasms)

E) Diseases of the male and female reproductive system (Histology, cell biology and hormonal secretion of both systems. Symptoms of ovarian and cycle disorders, uterine diseases, pregnancy and lactation. Infertility in men and women, prostate hyperplasia in men).

11. Most common skin diseases: Ways to diagnose skin diseases. Elementary skin lesions. Causes and significance of itching. Skin changes with age, environmental and professional habits. Moles and neoplasms. Squamous and basal cell carcinoma. Precancerous lesions, prevention. Skin infections (scabies, herpes, fungal infections, etc. Acne. Rosacea. Psoriasis. Dermatitis in general. Allergic reactions. Eczema. Pemphigus. Burns, wounds. Diseases of hair, glands, nails. Ants. Acute warts. Malignant melanoma. Vitiligo.

12. Major neoplasms. Precancerous conditions Symptoms and appearance.

13. More common diseases of the elderly. Falls. Problems of lonely old people. Payment. Depression. Dementia. Troubleshooting at home.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face in lecture hall.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of I.C.T. in Teaching for the slide show screen and course presentation and
• Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly
• Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, information for the observation of congresses related to the teaching lesson of the academic course, etc.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr></table></td></tr>
</table>

<table>
<tr>
<td>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td>
<td>
<table>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments.</td><td>40</td></tr>
<tr><td>Writing a paper</td><td>20</td></tr>
<tr><td>Educational visits/workshops/conferences</td><td>10</td></tr>
<tr><td>Independent Study</td><td>20</td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table>
</td>
</tr>
<tr>
<td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically defined evaluation criteria are given, and if and where they are accessible to students.</td>
<td>Theory

writing Final Examination (100%) which includes:

• Short answer questions
• Multiple choice questionnaires
• True-false answers</td>
</tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*

1. Venetikou M., Iatrakis G. Internal Medicine Handbook Zevelekakis publications, 2015

2. Kumar P. and Clark M.: " Internal Medicine " (2 volumes), Litsa Medical Publications, Athens 2007

3. RungeM., GregantiM., F. Netter: Internal Medicine (2 volumes) publications B.X. Paschalidis, Athens 2006

4. Chaniotis F., Chaniotis D. "Nosology - Internal Medicine" (volumes A', B', C', D'), Litsa publications, 2002

-*Related academic journals:*

1. Archives of Greek Medicine
2. British Medical Journal
3. Lancet
4. Internal Medicine Journal
5. European Journal of Internal Medicine
6. Annals of Internal Medicine
7. Journal of General Internal Medicine
8. Internal Medicine
9. Archives of Internal Medicine
10. Gastroenterology
11. Journal of the American College of Cardiology
12. Cardiology
13. The Gerontologist
14. American Journal of Public Health
15. Journal of Endocrinology
16. Clinical Endocrinology and Metabolism
17. Diabetes
18. Diabetes Care
19. Fertility-Sterility
20. The Hospitalist

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	3061	SEMESTER	3RD
COURSE TITLE	HISTOLOGY OF ORAL CAVITY AND DENTAL TISSUES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises,etc. If the credits are awarded for thewhole of the course, give the weekly teaching hours andthetotalcredits*	WEEKLY TEACHING HOURS	CREDITS
LECTURES	4	5
Addrowsifnecessary.The organization of teachingandthe teaching methods used are describedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge skills development*	CSEBC – Compulsory Elective Specific Background Course
PREREQUISITE COURSES:	ANATOMY I&II, PHYSIOLOGY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSEWEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT148/

2. LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

The students at the end of the semester will:

- Know the normal development of man and especially the development of the craniofacial region, the oral cavity and jaws.
- Correlate the histological structure of the basal tissues and the main organic systems with their function.
- be able to correlate the histological structure of the tissues of the mouth with the needs and quality of prosthetic restorations and orthodontic equipment.

The aim of the course is to acquaint students with:

- the basic principles of fetal development,
- the basic structure and function of cells and tissues,
- the basic structure and function of soft and hard tissues of the mouth

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking

Working in an interdisciplinary environment Production of new research ideas	…… Others… …….

- Autonomous work
- Teamwork
- Search, analysis and synthesis of data and information, using the necessary technologies

3. SYLLABUS

THEORY:

- Introduction, Structure and function of the cell.
- Tissues, types of tissues, Epithelial tissue, Connective tissue, Bone tissue. Muscle tissue. Nervous tissue.
- Basic principles of development. Embryology. Craniofacial development. Development of the face and oral cavity.
- Development of the upper and lower jaw, Development of the tongue.
- Congenital abnormalities of the craniofacial region, malformations.
- Odontogony/ Odontogenesis: initiation stage-dental lamina stage, cap stage, bell stage (proliferation-differentiation-morphogenesis) - dentinogenesis – amelogenesis, root formation stage (cementogenesis).
- Tooth eruption stage.
- Dental tissues histology: enamel, dentin, cementum, Dental pulp.
- Histology of Temporomandibular joint, Oral mucosa and Salivary glands.
- Microscopic examination, optic and electron microscope, techniques for the preparation of histological specimens.

4. TEACHING and LEARNING METHODS-EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc.</td><td colspan="2">In the classroom face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education,

communication with students</td><td colspan="2">Use of ICT in teaching Projective system and presentation ability with the implementation of the Power Point Program. Using search engines bibliography HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR. Use of e-mail and the Department's website for communication and information of students respectively. Viewing educational videos. Support of learning process through the electronic platform e-class.</td></tr>
<tr><td>TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.

Lectures,seminars,laboratory practice, fieldwork,studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS</td><td>Activity</td><td>Semester workload</td></tr>
<tr><td></td><td>Lectures, Presentations using audiovisual media</td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td></td><td>Course total</td><td>140</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible to students.</td><td colspan="2">Written final exam (100%) which includes:
•Multiple choice questions
• Short Answer Questions
• Development questions
• Questions of judgment, understanding of theory and evaluation of way of thinking

Students, when given the topics, are informed about how to evaluate each group of topics, depending on their degree of difficulty and take into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency.

Checking the writing test by the student</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

GREEK

1. Τζαμουράνης Α. Ιστολογία και εμβρυολογία των οδοντικών και περιοδοντικών ιστών. Αθήνα,1987.

2. Μήτσης Φ, Τζαμουράνης Α, Μόρφης Α. Άτλας οδοντικής ιστολογίας. Εκδόσεις Παρισιάνος. Αθήνα, 1989.

3. Μήτσης ΦΙ. Οδοντική ιστολογία και εμβρυολογία. Εκδόσεις Παρισιάνος. Αθήνα 1982.

4. MooreK. Μετάφραση: Κοντόπουλου ΑΝ, Καραβίτη ΛΠ. Βασική εμβρυολογία και συγγενείς ανωμαλίες. Ιατρικές εκδόσεις Λίτσας. Αθήνα 1978.

5. Αναγωστοπούλου Ανθούλη Φ. Ανοικτό διαδικτυακό μάθημα. Διαθέσιμο από τη δικτυακή διεύθυνση: https://eclass.teiath.gr/courses/TIE149/

6. Τζιαφάς Δ. Βιολογία των οδοντικών ιστών. Ανάπτυξη, Δομή και Λειτουργία. Εκδόσεις: UNIVERSITY STUDIO PRESS - ΑΝΩΝΥΜΟΣ ΕΤΑΙΡΙΑ ΓΡΑΦΙΚΩΝ ΤΕΧΝΩΝ ΚΑΙ ΕΚΔΟΣΕΩΝ. 1999.

English

1. OvalleK. WilliamandPatrickC. Nahirney. F. Netter'sEssentialHistology. Sanders, Elsevier, Philadelphia, 2008

2. Avery J. Essentials of oral histology and embryology. A clinical approach. The Mosby Co. 2000.

3. Bath-Balogh M, Fehrenbach M. Illustrated dental embryology, histology and anatomy. W.B. Saunders Co. 1997

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**3062**	SEMESTER	3rd
COURSE TITLE	OPTICAL MATERIALS OF OPHTHALMIC LENSES & HISTORY OF GLASS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the* *course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	5
Add rows if necessary. The organisation of teaching and the teaching *methods used are described in detail at (d).*		

COURSE TYPE *general background, special background, specialised general* *knowledge, skills development*	Special background/ SBC/CE
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	..

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

Upon successful completion of the course the student will be able:

- to know the history of glass, types and use of lens materials
- to understand the choice of optical materials, their properties and their advantages
- to understand the basic principles and terms of Optics and the use of ophthalmic lenses.
- to know ways of solving problems and making use of scientific methods.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking ……

	Others… …….
• Working independently • Team work.	

3. SYLLABUS

1. Glass in Prehistoric times - From the Egyptians to Murano. The Arabs and the development of Glass - From the "common" to the "Optical" Glass. - Basic Types of Optical Glass: CROWN Glass - FLINT Glass - High Refractive Glass - Organic [Plastic] Glass - Polymers in the Optical and Ophthalmic Industry
2. Optical Properties of Ophthalmic Material - Absorption and color - Radiation Protection - Polarizing and Photochromic Material - Design Optical Lens Improvements - Surface Improvements - Anti-reflective and anti-scratch coatings.
3. Optical Characteristics of Ophthalmic Lenses, Main foci-Main levels-Refractive and Diffusion Indices Thickness and specific gravity, Curvature and Strength. Neutralization and ways of measuring power.
4. 4. Ophthalmic Lens Frame Materials - From Wood, Tartaruga and Metals - Plastic Materials - Resins and Acetate - Gold and Platinum - Metal Alloys , Nickel and modern materials.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Open E-Class in teaching	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according*	*Activity*	*Semester workload*
	Lectures	60
	Study and analysis of bibliography, tutorials	80

to the principles of the ECTS		
	Course total	140
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)	

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

GREEK

1. **History and Optics of the Glass** - Dr. Aristides Chandrinos, ION Publications, 2011, ISBN 9789606970535

ENGLISH

2. A short history of glass - : H.N. Abrams in association with the Corning Museum of Glass, 1990

3. Glass and optical materials II - edited by Edward N. Boulos and Dennis R. Platts. - Westerville, Ohio : American Ceramic Society ; Amsterdam, The Netherlands : Elsevier Science, 1994,

1996

4 Introduction to glass science and technology - James E. Shelby. - Cambridge, England :

The Royal Society of Chemistry, 1997

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMICUNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVELOFSTUDIES	UNDERGRADUATE		
COURSECODE	3063	SEMESTER	3rd
COURSETITLE	BASIC PRINCIPLES OF DERMATO-COSMETIC SCIENCE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures ,laboratory exercises ,etc.If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	4
Add rows if necessary.The organisation of teaching and the teaching methods used ared escribedindetailat (d).		

COURSETYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SBC
PREREQUISITE COURSES:	NO
LANGUAGE OFI NSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://ocp.teiath.gr/courses/AISTH_UNDE100/ https://eclass.teiath.gr/courses/AISTH103/

2. **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

The aim of the course is for students to understand the development of the Dermato-Cosmetic Science and to learn to a great extent the chemical structures and the physicochemical properties of the basic ingredients used for the development, formulation, physicochemical and microbiological stability of the dermato-cosmetic products.

Cosmetics that contain bio-active substances and possess a dermato-cosmetic activity along with dermatological properties and can support the activity of pharmaceuticals often called dermato-cosmetics.

The goal of the course is for the students to learn the molecular approach to design dermato-cosmetics and products of skin topical application

Learning outcomes

After the end of the course students will be able to know:

- The physicochemical properties of the basic ingredients that are used for the design, development and formulation, physicoshemical and microbiological stability of cosmetic products
- The physicochemical properties of multiphase dispersed systems that are used in the formulation of cosmetic products
- The application of multiphase dispersed systems for the development of cosmetic products
- To design simple formulations of dermato-cosmetic products

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently, team work, working in an interdisciplinary environment, working in an international environment, Search for, analysis and synthesis of data and information, with the use of the necessary technology, Production of new research ideas, Production of free, creative and inductive thinking	

3. SYLLABUS

1. Products of skin topical application, introduction to the Basic Aspects of Cosmetic Science. The social impact of Cosmetic Science. Basic Principles of Skin Physiology. Application of the cosmetics to the skin. Classification of the cosmetics by their type of action, type of cosmetic formulation and chemical synthesis. Basic principles for the designing a new formulation. Criteria for the choice of the ingredients. Precautions.
2. Multiphase dispersed systems. Surfactants. Interphase. Mechanism of absorption of the surfactants to the interphase.
3. Classification of surfactants according to their chemical structure: Hydrocarbons, Classification of the surfactants by the Hydrophilic-lipophilic balance (HLB)-activity.
4. Carbon-silicon surfactants. Classification and physicochemical mode of action. Surfactants derived from biotechnological resources-Biosurfactants.
5. Colloids. Thermodynamic approach of colloids. Electrical and physicochemical properties of colloids. Stability. Solubilization, Micelles.
6. Emulsions. Emulsification-Thermodynamics. Classification and determination of the various types of emulsions. Classification of emulsifiers. (Gibbs, Langmuir). Criteria for the selection of the type of emulsifiers.
7. Stability and Instability of emulsions. Thermodynamics.
8. Stability tests of the emulsions, Accelerated tests.
9. Preservation of cosmetic products. Annex VI 76/768 EEC, 2003/15/EC, 2007/17 /EC and 2007/22/EC. Classification of preservatives by their chemical structures, alternative preservatives, self-preserving cosmetics. Preservative efficacy tests for topical skin products according to the European Pharmacopoeia and Greek legislation.
10. Rheology, thixotropy, antithixotropy. The influence of rheological properties of the systems on the development and manufacturing process of cosmetics.
11. Oxidation of cosmetic ingredients. Catalysis of oxidation. Classification of antioxidants and mechanism of action of phenolics, Natural antioxidants for the stability of cosmetic formulations.
12. Colors. Basic principles. Natural colors. Synthetic colors. Inorganic colors. Pigments. Stability of colors. Chemical properties.
13. Introduction to the basic method of scaling up. Introduction to the labeling and regulatory affairs of cosmetic products
14. The Science of Cosmetics-future technologies. Cosmetics and environment.

4. TEACHING and LEARNING METHODS-EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

UseofICTinteaching,laboratoryeducation,

communicationwithstudents</td><td>Use of ICT in teaching, Support of the learning process through e-class for the theoretical and laboratory part, videos of lectures pf the course under the auspices of the Institution, Exercises through e-class. Communication with students</td></tr>
<tr><td>TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.

Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements, clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS</td><td>
<table>
<tr><td>Activity</td><td>Semester workload</td></tr>
<tr><td>Lecture</td><td>80</td></tr>
<tr><td>Educational visit</td><td>10</td></tr>
<tr><td>Independent study</td><td>30</td></tr>
<tr><td></td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Coursetotal</td><td>120</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoice questionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient, artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.</td><td>FINAL WRITTEN EXAMINATION (100%): Multiple choice questionnaires, open-ended questions, characterization of sentences as True or False, problem solving</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Τσιρίβας Ε., Βαρβαρέσου Α. Παπαγεωργίου Σ. Βασικές Αρχές Κοσμητολογίας ISBN: 978-960-394-920-6 ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2012.
2. Sakamoto K., Lochhead R., Maibach H. and Yamashita Y. Cosmetic Science and Technology: Theoretical Principles and Applications, e Book ISBN: 9780128020548 Hardcover ISBN: 9780128020050, Elsevier (2017).
3. Hibbot H.W. Handbook of Cosmetic Science: An Introduction to Principles and Applications1483186474, 9781483186474, Elsevier (2016).
4. Mewis J. and Wagner N.J., *Colloidal Suspension Rheology*, ISBN: 9781107622807 Cambridge University Press: Cambridge, UK (2013).
5. Schlossman M.L. The Chemistry and Manufacture of Cosmetics. Vol 1 Science ISBN-13: 978-1932633474 4th edition, Allured Publishing Co., USA (2008).
6. Schueller R. and Romanowski P. Beginning Cosmetic Chemistry. 3rd edition ISBN-13: 978-1932633535 Allured Publishing Co.,USA (2009).

COURSE OUTLINE

6. GENERAL

SCHOOL	**Health & Care Sciences**		
DEPARTMENT	**Biomedical Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**3064**	**COURSE SEMESTER**	**3rd**
COURSE TITLE	**PATHOPHYSIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**4**	**4**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background/Compulsory Elective for the "Medical Laboratories" academic unit
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC254/

7. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The purpose of the course is for students to understand the concept of pathophysiological mechanisms that lead to the appearance of diseases in order to understand the causes, the substrate, and the expected symptoms of disease states.

After the end of the course students will be able to:

• To know the pathophysiological mechanisms that govern the various diseases in their genesis and symptomatology as well as their evolution

• Present and contribute to solving diagnostic and therapeutic problems with the cooperation of the medical staff.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Working independently
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

- Production of new research ideas

8. SYLLABUS

Theory

1. General Principles-Basic Concepts: Learning the usual pathological changes of cells and tissues (retrograde changes, proliferation disorders, atrophy, forms of atrophy, necrosis and death, types of necrosis, degeneration and types thereof). Specific pathological conditions of tissues such as deposits of inorganic or organic substances, calcification, carbonization, silicosis, lithiasis, pigment deposits, hemoironization and hemochromatosis, jaundice, types of jaundice. Restoration of histopathological changes, tissue regeneration. Learning the basic characteristics of tissue hyperplasia, hypertrophy and metaplasia. Genetic Disease-Pathophysiology of selective genetic disorders.

2. Learning Pathophysiological mechanisms by systems: Disorders of immune mechanisms - Selective Pathophysiology in diseases of the immune system (eg primary immunosuppression diseases, enzyme deficiency diseases, AIDS, etc.). Hematological diseases (genetic, molecular, biochemical and physiological parameters of hematological function and principles of the pathophysiology of hematological disorders) Selective pathophysiology of hematological diseases (red, white and platelet disorders-eg iron deficiency and megaloblastic anemia, thalassemias, sickle cell anemia, leukopenia, thrombocythemia and, aplastic conditions, hypercoagulable disorders.

3. Infectious diseases-Inflammation: Causes of inflammation, types of inflammatory reactions, histopathology of inflammation, importance and effects of inflammation. Pathophysiology of selective infectious diseases (eg infectious endocarditis, meningitis, pneumonia, diarrhea, sepsis, shock, etc.). Inflammatory rheumatic diseases (acute and chronic) Selective pathophysiology of systemic lupus erythematosus, vasculitis, etc. Neoplasms (molecular, biochemical and pathophysiological basis of neoplasia)-Classification-Pathophysiology of selective diseases, e.g. colon cancer, breast cancer, hematological cancers, systemic neoplasms, cancers of the reproductive system in men and women).

4. Diseases of the nervous system: (pathophysiology of diseases of the upper and lower motor neuron, the cerebellum as well as somatosensory diseases but also diseases of vision and hearing-Selective pathophysiology of Parkinson's disease, epilepsy, myasthenia gravis, dementias Alzheimer's etc.)

5. Skin diseases: (Selective pathophysiology of psoriasis, cutaneous lichen, erythema multiforme, pemphigus, vasculitis, contact dermatitis, allergic dermatitis, erythema nodosum, acne as well as sarcoidosis and dermatomyositis).

6. Pulmonary diseases: (Selective Pathophysiology of chronic bronchitis and pulmonary parenchyma (COPD), asthma, fibrosis, pulmonary and cardiac edema and embolism).

7. Cardiovascular diseases: (Selective pathophysiological mechanisms of the genesis and establishment of arrhythmias, left, right and total heart failure, aortic stenosis and insufficiency, mitral and tricuspid stenosis and insufficiency and related heart diseases. Coronary heart disease, pericardial disease and pathophysiological mechanisms of vascular disease and especially atherosclerosis, mechanisms of genesis of idiopathic and secondary hypertension and mechanisms of shock genesis. Pathophysiological hormonal parameters in heart disease).

8. Diseases of the adrenal medulla: (Pathophysiology of peripheral catecholamine secretion, pheochromocytomas. Diseases of the adrenal cortex Histology, cell biology, biochemistry and hormone production and secretion of the adrenal cortex. Selective pathophysiology of Cushing's syndrome, adrenal insufficiency (Addison's), tachyomas (incidentalomas), primary and secondary hyperaldosteronism and hypoaldosteronism).

9. Renal diseases: (Selective Pathophysiology of acute and chronic glomerulonephritis, acute and chronic renal failure, nephrotic syndrome, lithiasis and renal cancer).

10. Diseases of the gastrointestinal system and liver: (pathophysiology in diseases of the esophagus, stomach, biliary tract, small and large intestine – histology, cell biology, circulation and hepatocyte dysfunction, portal hypertension. Selective pathophysiology of esophageal achalasia, stomach ulcers and duodenum, gastroparesis, gallbladder diseases, diseases and inflammations of the small intestine, irritable bowel, diverticulitis. Selective pathophysiology of liver diseases, such as acute and chronic hepatitis, cirrhosis and its systemic complications and liver cancer.

11. Exocrine Pancreas: (Pathophysiological mechanisms of acute and chronic pancreatitis, pancreatic insufficiency and cancer. Endocrine pancreas. Histology and cell biology of the endocrine pancreas. Hormonal regulation and hormonal disruption in endocrine diseases. Pathophysiology of diabetes mellitus, as well as other pathological entities, such as insulinoma, glucagonoma and somatostatinoma). Pathophysiological mechanisms in diseases of parathyroid glands and calcium homeostasis: (histology of parathyroid glands, regulation of hormone secretion and disorders during disease. Pathophysiology of primary and secondary hyperparathyroidism, familial hypocalciuric hypercalcemia, malignant hypercalcemia, medullary thyroid cancer, osteomalacia. Pathophysiology of the mechanisms of initiation and establishment of osteoporosis).

12. Diseases of the hypothalamus and pituitary gland: (Histology and cell biology, hormonal actions and clinical manifestations of disorders of the hypothalamus and pituitary gland. Explanation of the peculiarities of pituitary embryology for a better understanding of the acquired and genetic component of the diseases. Selective pathophysiology of the types of pituitary adenomas, hypophysitis, obesity, diabetes mellitus and the syndrome of antidiuretic hormone (SIADH). Diseases of the thyroid gland (Histology, cell biology, normal and pathological thyroid secretion. Selective pathophysiology of hyperthyroidism, types of hyperthyroidism (especially Graves' disease), hypothyroidism, thyroiditis (especially Hashimoto's), goitre, nodules and neoplasms).

13. Diseases of the male and female reproductive system: (Histology, cellular biology and hormonal secretion of both systems. Selective pathophysiology of ovarian and cycle disorders, uterine diseases, pregnancy and lactation. Pathophysiological mechanisms of infertility in men

and women, hyperplasia of prostate in the man, etc.).

Learning how to gather and manage information for communication with specialist medical staff in daily practice as well as in the research dimension.

9. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of I.C.T. in Teaching for the slide show screen and course presentation and • Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly • Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, information concerning the attendance of congresses related to the academic course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	
STUDENT PERFORMANCE	

Activity	***Semester workload***
Lectures. Contributions and Lectures with the use of audiovisual instruments.	80
Writing a paper	30
Educational visits/workshops/conferences	10
Independent study	20
Course total	***140***

EVALUATION	Theory
Description of the evaluation procedure *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically defined evaluation criteria are given, and if and where they are accessible to students.*	Writing Final Examination (100%) which includes: • Short answer questions • Multiple choice questionnaires • True-false answers

10. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Chaniotis F., Chaniotis D. "Nosology - Internal Medicine" (volumes A', B', C', D'), Litsa publications, 2002

2. Kumar P. and Clark M.: " Internal Medicine " (2 volumes), Litsa Medical Publications, Athens 2007.

3. RungeM., GregantiM., F. Netter: Internal Medicine (2 volumes) publications B.X. Paschalidis, Athens 2006

4. Hope R.A., et.al: Oxford Handbook of Clinical Medicine. Litsa Medical Publications, Athens 2002

5. Venetikou-Iatrakis Manual of Internal Medicine Zevelekaki Publications 2015

6. McPhee S, Canong W : Pathophysiology of disease : An introduction to Clinical Medicine, The McGraw-Hill Companies Inc, N.Y. USA, fifth edition, 2006.

7. McPhee S., Papadakis M. “Current Medical Diagnosis & Treatment 2008” 47th International edition. The McGraw-Hill Companies Inc., N.Y. USA 2008

8. Fauci A., et.al. “HARRISON’S. Principles of Internal Medicine”, 17th edition. The McGraw-Hill Companies Inc., N.Y. USA 2008

9. Colour Atlas of Pathophysiology-Silbernagl and Lang Thieme Editions, NY, 2010

-Related academic journals:

1. Journal of Pathophysiology

2. Pathophysiology

3.International journal of Physiology-Pathophysiology

4. Journal of Molecular Pathophysiology

5. World Journal of Gastrointestinal Pathophysiology

6. International Journal of Physiology, Pathophysiology and Pharmacology

7. Journal of Basic and Clinical Pathophysiology

8.Canadian Journal of Pathophysiology

9. Applied Cardiopulmonary Pathophysiology

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
SECTION	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3065 (6e)	SEMESTER	3rd
TITLE	**INTRODUCTION TO RADIATIONS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	HOURS/WEEK	CREDITS
Lectures	4	5

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special Background
	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses

2. LEARNING OUTCOMES

Learning outcomes *The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will*

acquire with the successful completion of the course are described.

ConsultAppendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

Students should be able to display knowledge and comprehension of the basic science topics:

Reference to general concepts and theories of Physical Science and the presentation of key elements of atomic and nuclear physics that are necessary for understanding the nature of ionizing and non ionizing radiation.

Basic overview of the relevant to Radiology mathematics, such as algebra, exponential numbers, logarithms, limits, derivatives, integrals, roots.

Fundamentals of optical, acoustic, ultrasonic, fluid mechanics, laser and electromagnetism.

Introduction to the subject of atomic and nuclear physics, with emphasis on knowledge to be used for understanding the applications of radiation in diagnosis and treatment

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for analysis, synthesis of data information with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and*
Team work	*sensitivity to gender issues*
Working in an international environment	*Criticism and self-criticism*
Working in an interdisciplinary environment new research ideas	*Production of free, creative and inductive thinking*
	Others…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently Team work

- Working in an international environment Working in an interdisciplinary environment

3. COURSE SYLLABUS

1. Structure of matter. Atom, Bohr's atomic theory. Sizes and units in physics. Energy
2. Quantum theory of light, photon properties, nucleus structure. Shaft and potential barrier.
3. Stable and unstable nuclei. Rays α, β, γ. Radioactivity. Nuclear reactors. Applications of radioisotopes.
4. Principles of Mechanics and Heat. Movement. Forces. Energy.
5. Electric and magnetic field. Electromagnetism. Movement of charged particles inside the range of electric or magnetic fields. Basic electronic devices. Electrical instruments. Conductivity. Semiconductors.
6. Sources, Exposure in Ionizing radiation. X-ray generators, X-ray tube, a, β,γ radiation, neutrons. Production of X-radiation, X-radiation spectrum. Filters.
7. Interaction of radiation with matter, Photoelectric, Compton, etc. effects
8. Interaction of photons, electrons and other heavy ions with matter Use of radiation for imaging and therapy.
9. Attenuation and absorption of ionizing radiation.
10. Modern imaging equipment. Digital radiography, Mammography, DEXA, DENTAL, CT, PET.
11. Non ionizing radiation, Heat, MRI, Ultrasound, Thermography.
12. Laser as light source - Properties, Applications.
13. Microwaves
14. Fluid mechanics, fluid pressure, hydrodynamics.
15. Solved problems with physical quantity units.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, laboratory education, communication with students. Lesson e-class notes and data.	
TEACHING METHODS	*Activities*	*Semester workload*

The manner and methods of teaching are described in detail. *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning* *activity are given as well as the hours of non directed study according to the principles of the ECTS*	Lectures	52
	Essay	30
	Study	58
	Course total	140
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final written evaluation on 5 topics Alternatively written final evaluation with a weighting factor of 0,7 and participation in a working group that will present the work in an audience, with a weighting factor of 0,3. In this way the cooperation between the students is promoted	

5. RECOMMENDED BIBLIOGRAPHY

1. Serway R, Moses C, Majer C. Modern Physics. University Publications of Crete 2002.
2. Cameron, J.R, Skofronick, J.G Medical Physics J. Wiley, 1979.
3. Nave CR and Nave BC. Physics for health sciences. Saunders Co 3rd Edition, 1985. ISBN 0721613098.
4. Lambourne R. and Tinker M. Basic Mathematics for the Physical Sciences. Wiley, 2000. ISBN 0-471-85207-4.

- Related academic journals:

1) *Physics in Medicine and Biology LINK*
2) *Medical Physics LINK*
3) *Radiotherapy and Oncology LINK*
4) International Journal of Radiation Oncology, Biology, Physics *LINK*

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	DENTAL TECHNOLOGY		
COURSE CODE	3071-3072	SEMESTER	3rd
COURSE TITLE	INTRODUCTION TO BIOMATERIALS OF DENTAL TECHNOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.Ifthecreditsareawardedforthewhole of the course ,give the weeklyteachinghoursandthetotalcredits*	WEEKLY TEACHING HOURS	CREDITS
THEORETICAL COURSES	4	7
LABORATORY COURSES	2	
TOTAL	6	
Add rowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skills development*	CESBC – Compulsory Elective Specific Background Course
PREREQUISITE COURSES:	GENERAL AND INORGANIC CHEMISTRY, ORGANIC CHEMISTRY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	..

2. **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

Upon completion of the course, students will:

- Know the basic concepts and laws of the properties of dental materials that they will use in their practice
- Know the properties of the materials used in everyday lab practice
- Be able to choose the proper material for the right method
- Be able to apply properly the various fabrication techniques in accordance with the materials' specifications

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others…

	…….

- Independent practice
- Working in full educated working groups
- Decision making
- Producing new research projects
- Promoting free, creative and inductive thoughts
- Ability to adjust in changing situations

3. **SYLLABUS**

THEORY

- Historical overview. Knowing the stages of the development of dental biomaterials is a prerequisite to understanding modern data in these materials
- Internal structure of substances. Crystal lattice and structure
- Physical and chemical properties of materials
- Optical, thermal and electrical properties of materials
- Surface properties of materials
- Mechanical properties and mechanical behavior of materials
- Metals and alloys, structure, properties
- Alloy casting technique in dental technology

LABORATORY

During the laboratory exercise the students will be familiar with the gypsum – dental plaster, which is one of the most basic materials in Dental Technology. They will make casts of dentulous and edentulous patients. These casts will be used in next semesters laboratory exercises.

The students will learn the use of simple laboratory equipment and they will see new devices

which are used in Prosthodontic Dental Technology. They will, also, visit the Department's Research Laboratory to combine this knowledge with the upcoming courses of "Research Methodology" and "Research Planning"

4. **TEACHING and LEARNING METHODS-EVALUATION**

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc.</td><td colspan="2">In lectures in classroom and in laboratory exercises at the laboratory</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY

UseofICTinteaching,laboratoryeducation,

communicationwithstudents</td><td colspan="2">Using modern teaching electronic methods and devices in the classroom. Connecting in the Internet and projection of teaching material and videos</td></tr>
<tr><td>TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.

Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements, clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>Activity
Courses
Laboratory Exercises

Course total</td><td>Semester workload

180</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation, summativeorconclusive,multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient, artinterpretation,other

Specifically-defined evaluationcriteriaaregiven, and if and where they are accessible tostudents.</td><td colspan="2">Final writing Examination (60%) which contains:

Growing theoretical questions in order to understand the basic principles of the course, combining with multiple choice questions

Practical evaluation in laboratory exercises (40%)

Checking student's paper

Student's evaluation in the laboratory by two teachers for estimating the median

The course is evaluated during the internal evaluation procedure every semester</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek

1. Καφούσιας Ν, Μπαλτζάκη Γ, Σταθόπουλος Απ. Οδοντιατρικά Βιοϋλικά. Εκδόσεις Ακίδα. Αθήνα 1994
2. Σταθόπουλος Απ,Α: Οδοντιατρικά Υλικά. Εκδόσεις Γρηγ. Παρισιάνος. Αθήνα 1988
3. ΘεοχάρηςΠ: Πειραματική αντοχή των υλικών. Εκδόσεις ΕΜΠ. Αθήνα 1989

English:

1. Sakaguchi RL, Powers JM: Graig's Restorative Dental Materials. 13th Ed. Elsevier. Philadelphia 2012
2. Anusavice KJ : Phillips' Science of Dental Materials. 11thed. Saunders. St Louis 2003
3. O' Brien WJ: Dental Materials and their selection. 4th ed. Quintessence Books 2008

- Related academic journals:

1. Dental Materials - Elsevier

2. Journal of Prosthetic Dentistry – Elsevier

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3073-3074	SEMESTER	3o
COURSE TITLE	GEOMETRIC AND PHYSICAL OPTICS		

INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS
THEORETICAL LECTURES + LABORATORY EXERCISES	4+2	7

COURSE TYPE	Special background/ SBC/CE
PREREQUISITE COURSES:	This module requires a basic understanding of high school algebra, trigonometry, general scientific nomenclature, the scientific process, units conversions, and basic concepts in elementary physics and chemistry.
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC165/

2. LEARNING OUTCOMES

Learning outcomes

Upon successful completion of this course, the students should be able to:

• Define the following properties of light:

- Speed
- Frequency
- Wavelength
- Energy

• Describe the dual nature of light, as a continuous wave and a discrete particle (photon), and give examples of light exhibiting both natures.

• Distinguish between light rays and light waves.

• State the *law of reflection* and show with appropriate drawings how it applies to light rays at plane and spherical surfaces.

• State *Snell's law of refraction* and show with appropriate drawings how it applies to light rays at plane and spherical surfaces.

• Define *index of refraction* and give typical values for glass, water, and air.

• Calculate the *critical angle* of incidence for the interface between two optical media and describe the process of *total internal reflection*.

• Describe how total internal reflection can be used to redirect light in prisms and trap light in fibers.

• Describe *dispersion* of light and show how a prism disperses white light.

• Calculate the *minimum angle of deviation* for a prism and show how this angle can be used to determine the refractive index of a prism material.

• Describe what is meant by *Gaussian* or *paraxial* optics.

• Describe the relationship between *collimated light* and the *focal points* of convex and concave *mirrors*.

• Use *ray-tracing techniques* to locate the images formed by plane and spherical mirrors.

• Use the *mirror equations* to determine location, size, orientation, and nature of images formed with spherical mirrors.

• Distinguish between a *thin lens* and a *thick lens*.

• Describe the shapes of three typical *converging (positive)* thin lenses and three typical *diverging (negative)* thin lenses.

• Describe *the* f-*number* and *numerical aperture* for a lens and explain how they control image brightness.

• Use *ray-tracing techniques* to locate images formed by *thin lenses*.

• Describe the relationship between *collimated light* and the *focal points* of a *thin lens*.

• Use the *lensmaker's equation* to determine the focal length of a thin lens.

• Use the *thin-lens equations* to determine location, size, orientation, and nature of the images formed by simple lenses.

• Describe the properties of electromagnetic waves and give everyday examples.

• Explain the mechanism that causes light to be polarized, explain the use of polarizing material, and give an example of the use of polarizers.

• Describe Huygens' principle and the superposition principle.

• Define the terms *reflection*, *refraction*, and *index of refraction* and explain how they are related.

• Explain diffraction and interference in terms of Huygens' principle.

• List the three types of emission and identify the material properties that control the emission type.

• Describe in a short paragraph the electromagnetic spectrum and sketch a diagram of the key optical regions and uses.

• Give a basic explanation of atoms and molecules and their ability to absorb, store, and emit quanta of energy.

• Define the primary equations describing the relationships between temperature of, wavelength of, and energy emitted by a blackbody and a graybody.

• Describe the mechanisms that affect light propagating in a medium and its transmission

• Describe a *wave front.*

• Describe the relationship between *light rays* and *wave fronts*.

• Define *phase angle* and its relationship to a *wave front*.

• Calculate *water wave displacement* on a sinusoid-like waveform as a *function of time and position.*

• Describe how *electromagnetic waves* are *similar* to and *different* from *water waves*.

• State the *principle of superposition* and show how it is used to combine two overlapping waves.

• State *Huygens' principle* and show how it is used to predict the shape of succeeding wave fronts.

• State the *conditions required* for producing *interference patterns*.

• Define *constructive* and *destructive* interference.

• Describe a *laboratory setup* to produce a *double-slit interference pattern*.

• State the *conditions* for an *automatic phase shift of 180° at an interface between two optical media*.

• *Calculate the* thickness of *thin films* designed to *enhance* or *suppress* reflected light.

• Describe how *multilayer stacks* of quarter-wave films are used to *enhance* or *suppress* reflection

over a *desired wavelength region*.

• Describe how *diffraction* differs from *interference*.

• Describe *single-slit diffraction* and *calculate positions of the minima* in the diffraction pattern.

• Distinguish between *Fraunhofer* and *Fresnel* diffraction.

• Sketch typical Fraunhofer *diffraction patterns* for a *single slit, circular aperture,* and *rectangular aperture*, and use equations to calculate *beam spread* and *fringe locations*.

• *Describe* a transmission grating *and calculate positions of different orders of diffraction*.

• Describe what is meant by *diffraction-limited optics* and describe the difference between a *focal point in geometrical optics* and a *focal-point diffraction pattern in wave optics*.

• Describe how *polarizers/analyzers* are used with polarized light.

• State the *Law of Malus* and explain how it is used to calculate intensity of polarized light passing through a polarizer with a tilted transmission axis.

• Calculate *Brewster's angle of incidence* for a given interface between two optical media.

General Competences
– Obtain basic knowledge, necessary for practicing applied science – Search for, analysis and synthesis of data and information, with the use of the necessary technology – Adapting to new situations – Decision-making – Working independently – Team work – Working in an international environment – Working in an interdisciplinary environment – Production of new research ideas – Project planning and management – Criticism and self-criticism – Production of free, creative and inductive thinking

3. SYLLABUS

- Nature, Properties and Propagation of Light
- Dual Nature of Light - Light rays and light waves - Concept of a photon - Characteristics of light waves - Maxwell equations
- The Electromagnetic Spectrum
- Atomic Structure - Interactions of Light with Matter
- Blackbody Radiation - Spectral distribution

- Optical Rays - The Rectilinear Propagation of Light Optical path
- The Speed of Light in Vacuum and in Stationary Media – Index of Refraction
- REFLECTION AND REFRACTION OF LIGHT - The laws of reflection: plane & curved surfaces – mirrors – image formation - Graphical ray-trace method - Sign convention - Magnification of a mirror image
- Refraction of light from optical interfaces - Snell's law – Fermat's Principle - Least time principle
- Critical angle and total internal reflection - fiber optics
- THE PRINCIPLE OF REVERSIBILITY OF LIGHT
- DISPERSION OF LIGHT – PHYSICAL PHENOMENA
- Refraction in prisms - Minimum angle of deviation - Special applications of prisms
- Refraction from spherical surfaces - Thin lenses - IMAGE FORMATION WITH LENSES - Function of a lens - Types of lenses - Converging and diverging thin lenses - Focal points of thin lenses - Image location by ray tracing - Lens formulas for thin lenses - Sign convention – Linear/ Transverse Magnification - Combination of thin lenses - Lenses with thickness - Lens manufacturers' equations
- Gauss – Newton - Lens power - fundamental points - Radius paths - Introduction to the theory of matrices.
- Variation of Reflective index with wavelength - Lenses Aberrations (Spherical, Chromatic, etc. Aberrations)
- LIGHT WAVES AND PHYSICAL OPTICS
- Physics of waves and wave motion - The mathematics of sinusoidal waveforms – Oscillations - Harmonic waves
- INTERACTION OF LIGHT WAVES - The principle of superposition
- Huygens' Principle and wavelets
- INTERFERENCE - Young's double-slit interference experiment - Constructive and destructive interference – Thin-film interference
- DIFFRACTION - Diffraction by a single slit - Fraunhofer and Fresnel diffraction - Diffraction Grating - Diffraction-Limited Optics
- DISTINCTION BETWEEN INTERFERENCE AND DIFFRACTION
- POLARIZATION - Polarization of light waves - Types of Polarization - Methods of Polarizing Light – Malus' Law - Polarization by reflection and Brewster's angle
- Absorption of Light - Filters - Scattering of Light - Optical Windows

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
.</td><td>DIRECT, IN CLASS, FACE TO FACE,</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</td><td>LEARNING SUPPORT WITH ASYNCHRONOUS EDUCATING PLATFORMS (e-class), LABORATORY EDUCATION</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>LECTURES</td><td>50</td></tr>
<tr><td>LABORATORY PRACTICE</td><td>50</td></tr>
<tr><td>FIELDWORK STUDY & ANALYSIS</td><td>80</td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION</td><td>I. WRITTEN EXAMINATION (problem solving, multiple choice questionnaires, short-answer questions, open-ended questions)

II. LABORATORY WORK (written reports on laboratory experiments)</td></tr>
</table>

GREEK

1. Optics - Alexopoulos, Caesar D., 1909-. - Athens: Olympia, 1963-1993
2. Geometric Optics, Asimellis G., Vamvakas I., Drakopoulos P., Publications Contemporary Knowledge, 2012
3. APPLIED OPTICS, D. ZEVGOLIS, 2nd Edition, TZIOLA Publications, Thessaloniki 2007.
4. WAVE - OPTICS, A. Prikas, ZITI Publications, Thessaloniki 2009

FOREIGN

5. Introduction to Geometrical Optics, Katz M., World Scientific Publishing Co, 2002
6. Geometrical optics and related topics - Ferruccio Colombini, Nicolas Lerner, editors. - Boston : Birkhduser, 1997
7. Handbook of optics sponsored by the Optical Society of America. - New York : McGraw-Hill, 1995-2001
8. Modern geometrical optics - Richard Ditteon. - New York : Wiley, 1998
9. Geometrical optics and optical design - Pantazis Mouroulis, John Macdonald. - New York ; Oxford : Oxford University Press, 1997
10. Handbook of optics sponsored by the Optical Society of America. - New York : McGraw-Hill, 1995-2001
11. Schaum's outline of theory and problems of optics Eugene Hecht. - New York : McGraw-Hill, 1975
12. Fundamentals of optics Francis A. Jenkins, Harvey E. White. - New York : McGrawHill, 1976
13. Modern optics – Robert D. Guenther. - New York ; Chichester : Wiley, 1990
14. Introduction to modern optics Grant R. Fowles. - New York : Dover Publications, 1989, 1975
15. Optics Hecht, Eugene. - New York : McGraw-Hill, 1979
16. Useful optics Walter T. Welford. - Chicago : University of Chicago Press, 1991
17. Geometric, Physical, and Visual Optics, Keating MP, Butterworth – Heinmann, 2002.
18. Introductory university optics J. Beynon. - London ; New York : Prentice Hall, 1996
19. Introduction to optics Frank L. Pedrotti, Leno S. Pedrotti. - Englewood Cliffs, N.J. Prentice-Hall International, 1993
20. Beiser, Arthur. Physics, 3rd Edition, Menlo Park, California: The Benjamin/Cummings Publishing Company, 1982.
21. Hecht, E., and A. Zajac. Optics, 2nd Edition. Reading, Massachusetts: Addison Wesley Publishing Company, 1987.
22. Pedrotti, F., and L. Pedrotti. Introduction to Optics, 2nd Edition. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1993.
23. Pedrotti, F., and L. Pedrotti. Optics and Vision. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1998.
24. Serway, R. A. Principles of Physics. Orlando, Florida: Saunders College Publishing, 1992.
Waldman, Gary. Introduction to Light. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1983.

5. ATTACHED BIBLIOGRAPHY

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3075-3076	SEMESTER	3rd
COURSE TITLE	BASIC PRINCIPLES OF DERMATOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures and Laboratory	6 (4+2)	7
Add rows if necessary. The organization of teaching and the teaching *Methods used are described in detail at (d).*		

COURSE TYPE *general background, special background, specialized general* *knowledge, skills development*	SBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- DescriptorsforLevels6,7&8oftheEuropeanQualificationsFrameworkforLifelongLearningand Appendix B
- Guide lines for writing Learning Outcomes

The purpose of the course is to educate and familiarize students with the basic principles of Dermatology.

Specific knowledge:

- Anatomy, Histology, Physiology
- Functions of human skin and cutaneous diseases from environmental effects such as, sun, heat and cold.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations Decision-making

Working independently Teamwork

Working in an international environment Working in an interdisciplinary environment Production of new research ideas

Project planning and management Respect for difference and multiculturalism Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Independent work
- Teamwork
- Working in an international environment
- Work in an interdisciplinary environment
- Showing social, professional, and ethical responsibility and sensitivity to gender issues

3. SYLLABUS

1. Anatomy of the skin
2. Anatomy of skin appendages
3. Keratinocytes
4. Melanocytes
5. Langerhans cells
6. Sebaceous glands
7. Sweat glands:eccrine and apocrine
8. Hair
9. Nails
10. Subcutaneous tissue
11. Physiology of the skin
12. Functions of the skin
13. Primary skin lesions
14. Secondary skin lesions
15. Specific skin lesions
16. Clinical diagnosis of dermatoses
17. Heat burns
18. Burns from electricity
19. Miliaria
20. Erythema ab igne
21. Cheimetla
22. Sunburn
23. Freckles
24. Solar elastosis
25. Phototoxicity

26. Polymorphous light eruption

27. Granulomas

28. Itch

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education,* *Communication with students*	Teaching laboratory education Communication with students (e-mail, e-class)	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study y and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, education a visit, project, essay writing, artistic creativity, etc.* *The student's study hours ore clearing activity are given as well as the hours of non-directed study according to the principles of the ECTS*	*Activity*	*Semester work load*
	Lectures- interactive teaching	90
	Laboratory	90
	Course total	180
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art in perpetration, other* *Specifically-define devaluation criteria are given, and if and where they are accessible to students.*	Multiple-choice questionnaires True or False questions	

5. ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

1. Du Vivier A. Κλινική Δερματολογία με Έγχρωμες Εικόνες. Ιατρ. Εκδ. Πασχαλίδης, Αθήνα, 2012.
2. William J, Berger T, Elston D. Andrew's Diseases of Skin. Ιατρ. Εκδ. Πασχαλίδης, Αθήνα, 2011.
3. Bolognia J, Jorizzo J, Schaffer J. Dermatology. 3rd ed. Elsevier Saunders, 2012.

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	3077-3078	SEMESTER	3nd
COURSE TITLE	PRINCIPLES OF INSTRUMENTAL ANALYSIS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
LECTURES	4	7
LABORATORY EXERCISES	2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIAL BACKGROUND/ COMPULSORY ELECTIVE
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	UNIWA Open eClass | Αρχές Ενόργανης Ανάλυσης (Θ) UNIWA Open eClass | Αρχές Ενόργανης Ανάλυσης (Ε)

2. **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

The student, with the successful completion of the course, should:

know the types of instrumental methods of analysis.

- have acquired knowledge of the powerful and elaborate collection of tools, for qualitative and quantitative analysis of the matter.
- have understood the basic operation principles of measuring instruments.
- be able to compare the capabilities, the advantages and disadvantages of various analysis techniques.
- be able to understand the possible sources of errors, that follow the measurements.
- Understand the limitations of sensitivity, repeatability and accuracy of instrumental measurements.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking ……

	Others… …….

Students, after the successful completion of the course, will:

- have the ability to choose a technique, or combination of techniques, to solve analysis problems of real samples, considering the cost and the performance of the technique.
- have the ability to adopt and apply methodology in familiar problems.
- have developed critical thinking, teamwork and interaction ability with other disciplines, in interdisciplinary problems.
- have developed study skills, necessary for continuous professional development.

3. **SYLLABUS**

THEORETICAL PART

Introduction

Classification of Analytical Methods-Types of Instrumental Methods of Analysis-Analytical Instruments- Selection of an Analytical Method- Calibration in Instrumental Methods- Signal and Noise

Atomic Spectroscopy I

Introduction to Spectroscopic Techniques- Organology- Atomic Absorption and Atomic Fluorescence Spectrometry- Atomic Emission Spectrometry

Atomic Spectroscopy II

Atomic Mass Spectrometry- X-ray Spectrometry

Molecular Spectroscopy I

Introduction to Ultraviolet / Visible Molecular Absorption Spectrometry (UV / Vis)- Applications of Ultraviolet / Visible Molecular Absorption Spectroscopy (UV / Vis)- Molecular Luminesence Spectrometry

Molecular Spectroscopy II

Introduction to Infrared (IR) Spectrometry- Applications of Infrared Spectrometry- Raman Spectroscopy

Molecular Spectroscopy III

Nuclear Magnetic Resonance Spectroscopy- Molecular Mass Spectrometry- Electron Microscopy

Separation Methods I

Introduction to Chromatographic Separations- Gas Chromatography

Separation Methods II

High Performance Liquid Chromatography (HPLC)

Separation Methods III

Extraction and Supercritical Fluid Chromatography- Electrophoresis and Capillary Electrochromatography

Electroanalytical Chemistry I

Introduction to Electroanalytical Chemistry- Coulometry

Electroanalytical Chemistry II

Voltametry- Potentiometry

Radiochemical and Thermal Methods

Automated Analysis Methods

LABORATORY PART

Ultraviolet / Visible Molecular Absorption Spectrometry: qualitative analysis, obtaining a spectrum of substance.

Ultraviolet / Visible Molecular Absorption Spectrometry: Quantitative analysis of proteins.

Atomic Emission Spectrometry: Quantitative analysis of Na^+ and K^+ quantification by flame photometry

Infrared (IR) Spectrometry: Analysis of uroliths.

High Performance Liquid Chromatography (HPLC), Reverse Phase: Quantitative determination of caffeine.

Automatic analyzer: Determination of enzymes, lipids, glucose and electrolytes.

4. **TEACHING and LEARNING METHODS - EVALUATION**

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc.</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education,

communication with students</td><td>Use of ICT in teaching and laboratory practice.

Use of the e-mail and the course website for communication and notification of students.

Use the e-class for posting and circulation of scientific articles, instructions, lectures, useful links.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>LECTURES</td><td>120</td></tr>
<tr><td>LABORATORY PRACTICE</td><td>60</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>THEORETICAL PART

Written final exam (100%) that includes:

Multiple Choice Questions

Short Answer Questions

LABORATORY PART

Laboratory work and an essay/report in each laboratory module

Written final exam that includes multiple choice and short answer questions</td></tr>
</table>

5. **ATTACHED BIBLIOGRAPHY**

- Suggested bibliography:

Comprehensive Analytical Chemistry, Volume 47, Pages 1-864 (2006) Modern Instrumental Analysis Edited by S. Ahuja and N. Jespersen ISBN: 978-0-444-52259-7

- Related academic journals:

Journal of Chromatography B: Biomedical Sciences and Applications, Elsevier

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	3079-3080 (7e)	SEMESTER	3RD
COURSE TITLE	INTRODUCTION TO MEDICAL IMAGING AND RADIOTHERAPY		

INDEPENDENT TEACHING ACTIVITIES *If credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.* *If the credits are awarded for the whole of the course,give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
LECTURES	4	
LABORATORY	2	
Add rows if necessary.The organization of teaching and the teaching *Methods used are described in detail at (d).*	6	7

COURSE TYPE *general background,* *special background,* *specialized* *general knowledge, skills development*	SBC – Specific Background Course CE – Compulsory Elective
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC177/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course, are described.

Consult Appendix A

Description of the level of learning outcomes for each qualification cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Guidelines for writing Learning Outcomes

The student will become acquainted with the:

- concept of medical imaging, the quality characteristics of the medical images
- basic principles of the different imaging modalities
- current advances in medical imaging
- clinical applications of the imaging modalities
- basic principles of radiation biology
- Radiation treatment technology
- The process of radiotherapy
- Image guided interventions

This course is introductory to the imaging and radiation therapy techniques currently used in health care. It offers a short review of the historical developments and a view to future expectations.

The aim of the course is to familiarize students with the course subject even if they will work in other areas of health care.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology *Adapting to new situations* *Decision-making* *Working independently* *Team work*	*Project planning and management* *Respect for difference and multiculturalism* *Respect for the natural environment* *Showing social, professional and ethical responsibility and* *sensitivity to gender issues* *Criticism and self-criticism*

Working in an international environment *Working in an interdisciplinary environment* *Production of new research ideas*	*Production of free, creative and inductive thinking* *……* *Others….*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment

3. SYLLABUS

Theory

1. Introduction to medical Imaging. What is a medical image and what are the differences between several types of medical images
2. Conventional X-ray imaging. From Rontgen's discovery in 1995 to the current imaging and treatment modalities.
3. Other imaging modalities. Fluoroscopy, Mammography, Densitomretry.
4. Sectional Imaging. The principles of tomography imaging. Differences from projectional imaging, applications, sections / images.
5. Computed Tomography. Basic principles of computed tomography, current developments, clinical applications.
6. Ultrasound. Basic principles of ultrasound, current developments, clinical applications.
7. Magnetic Resonance Imaging. Basic principles of MRI, current developments, clinical applications.
8. Nuclear Medicine. Radioactivity. Basic principles of nuclear Medicine, current developments, clinical applications.
9. Radiotherapy. Basic principles of radiobiology. Radiotherapy techniques. Current developments and applications.

10. The complementary role of the imaging modalities and hybrid imaging.

11. Fighting cancer. Medical and other cancer treatments except radiotherapy.

12. Interventional procedures. Image guided diagnostic and treatment techniques.

Laboratory

The students familiarize with the Department of Medical Imaging, projectional imaging, the basic operations of X-ray equipment and the quality assessment of X-ray images.

From image to photon. Students work backwards, starting from widely used projection images, recognize the anatomy already known and comment on the patient position that will produce certain images.

(3) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In the classroom face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education,* *Communication with students*	Use of ICT in teaching Projective system and presentation ability with Power Point Program. Using search engines, educational videos. Use of e-mail and the Department's website for communication and information of students. Support of learning process through the electronic platform e-class.	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of theECTS*	*Activity*	*Semester workload*
	Lectures	60
	Laboratory	28
	Personal Study and assignments	92
	Course total	180

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (70%) which includes: •Multiple choice questions • Short Answer Questions • Development questions • Questions of judgment, understanding of theory and evaluation of way of thinking Assignments (30%) Students, when given the topics, are informed about the evaluation process depending on their degree of difficulty and take into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency. Laboratory Written examination. Accessible to students.

(4) RECOMMENDED BIBLIOGRAPHY

GREEK

1. Κανδαράκης Ι. ***Ιατρική Φυσική-Βιοϊατρική Τεχνολογία: Ακτινοδιαγνωστική.***Πανεπιστημιακές Εκδόσεις "Αράκυνθος", έκδοση 2008, σελίδες 352, ISBN: 978-960-89768-1-8.
2. Ψαρράκος Κ, Μολυβδά-Αθανασοπούλου Ε, Γκοτζαμάνη-Ψαρράκου Α, Σιούντας Α. ***Επίτομη Ιατρική Φυσική***, University StudioPress, Θεσσαλονίκη 2012, σελίδες 511, ISBN: 978-960-12-2092-5

ENGLISH

3. ***Webb's Physics of Medical Imaging***. M. A. Flower (Editor) CRC Press, Taylor & Francis Group, 2012. ISBN: 978-0-7503-0573-0.
4. Fauber TL. ***Radiographic Imaging and Exposure.*** 3rd edition, Mosby, 2009. ISBN 978-0-323-04727-2
5. Bushong S. ***Radiologic Science for Technologists****: Physics, Biology, and Protection. 9*th ed. St. Louis, Mo: Mosby; 2008. ISBN 978-0-323-04837-8
6. Brinton Wolbarst A, ***Physics of Radiology***, Appleton & Lange, ISBN 0-8385-5769-4.

9.4 Division of Aesthetics & Cosmetic Science - Courses outline

9.4.1 4th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4031**	**SEMESTER**	4th
COURSE TITLE	DERMATOAESTHETIC I		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the totalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		3	4
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SBC		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE(URL)			

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of the course is to enable students :

- To understand and apply different types of cosmetics in different cases.
- To make diagnosis and proper classification of the skin into categories and types. Non-pathological cases.
- To understand the need for deep cleaning and peeling, to acquire skills on the methods of applying and use them on different cases.
- Treatment of skin discolorations byapplying chemical peeling.
- To acquire knowledge of hygiene rules and methods ofsterilization of materials and objects that will be used during the application of the methods mentioned above.
- To understand the etiopathogenetic mechanisms of the appearance problems of the eye area.
- To diagnose eye area problems(swellings-wrinkles-dark circles) and apply treatment.
- To understand thedifference between injectable and non -injectable. Mesotherapy and apply appropriate substances on different cases.

Learning outcomes:

1. Use of appropriate cosmetics and treatments for home application.
2. Separation of skin types (non-pathological conditions) into categories.
3. Treatment of deep cleansing and keratolysis (peelings).
4. Implementation of techniques and permitted chemical peelings in the laboratory.
5. Application of treatments for the prevention and restoration of discoloration.
6. Ways and methods of applying cosmetic substances used in non-injectable mesotherapy to prevent and restore skin problems.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Independent work
- Teamwork
- Working in an international environment
- Work in an interdisciplinary environment
- Showing social, professional and ethical responsibility and sensitivity to gender issues

(3) **SYLLABUS**

TheoreticalPartof the Course:

- Clinical applicationofbasiccosmeticproducts.
- Clinicaldiagnosisof skintypes.
- ThermalandnonthermalsterilizationmethodsintheAestheticsLaboratory.
- Clinicalapplicationoffirst,second,third,fourth,fifth,sixthstagein deep cleaning.
- Applicationofbasiccosmeticproducts.(cleaningproducts, moisturizingproducts,etc.)
- Incidentassessment.Treatmentprotocols, rehabilitation schemes.
- Physiology,biochemistryof facial massage,manipulations,results. Hygiene.
- Clinicalapplication ofpeelingtypes.
- Indications,contraindications,precautions,methods ofapplication,results,expectedresults).
- Chemicalpeelings(AHD,trichloroaceticacid,etc)(indications,contraindications,precautions,methodsofclinicalapplication).
- Treatmentofdisordersinskinpigmentationby aesthetics.
- Eyeareaproblems,etiopathogenesis,clinicalpicture,histology,epidemiology,types of skin lesions.
- Specialcosmeticproducts.
- Specialaestheticrestoration.
- Non-injectablemesotherapy clinicalexercise.

(4) **TEACHING and LEARNING METHODS- EVALUATION**

DELIVERY *Face-to-face, Distance learning,etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Teaching laboratory education Communication with students (e-mail, e-class)

TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures- interactive teaching	120
	Course total	120

STUDENT PERFORMANCE EVALUATION *Description of the evaluationprocedure* *Language of evaluation, methods of evaluation,summative or conclusive, multiple choicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	• Multiple-choice questionnaires • Sort -answer questions

(5) ATTACHED BIBLIOGRAPHY

GREEK BIBLIOGRAPHY

1. Κεφαλά Β., Αισθητική Προσώπου Ι, Εκδ. της ιδίας, 2007, ISBN 960-90857-1-7
2. Κεφαλά Β., Η θεραπευτική της ακμής και η συμπτωματική αντιμετώπισή της από τον Αισθητικό, Εκδ. της ιδίας, 2004, ISBN 960-90857-0-9

FOREING BIBLIOGRAPHY

1. Facial Aesthetics: Concepts and Clinical DiagnosisHardcover.Farhad B. Naini ISBN-13 : 978-1-4051-8192-1 .Edition: 1st. 2011, Willey-Blackwell
2. Comprehensive Aesthetic Rejuvenation: A Regional Approach Jenny Kim, Gary Lask, Andrew Nelson. Informa healthcare press .Edition 1st. 2011 .ISBN 978 -0-4154-58948
3. The Male Patient in Aesthetic Medicine . Springer.De Maio**,** Mauricio,Rzany**,**Berthold 2009 ISBN 978-3-540-79046-4
4. Cosmetic Dermatology: Requisites in Dermatology Series, 1eHardcover

2008byMuradAlam MD , Hayes B Gladstone MD , ISBN-13: 978-0702031434 I SAUNDERS ELSEVIER

5. Milady's Aesthetician Series: Peels and Chemical ExfoliationPaperback– January 1, 2010by Pamela Hill. ISBN-13: 978-1435438668 ISBN-10: 1435438663 Edition: 2nd Informa Health Care

6. Step by Step Chemical PeelsPaperback– March 31, 2010Niti KhungerISBN-13: 978-0071667258 Edition: 1st Informa Health Care

7. Cosmeceutical Science in Clinical Practice (Series in Cosmetic and Laser Therapy)2010Neil S. Sadick,Mary Lupo,Diane S. Berson Zoe Diana DraelosISBN-13: 978-0415471145 Edition: 1st Informa HealtCare

8. Nanocosmetics and Nanomedicines: New Approaches for Skin CareHardcover– May 4, 2011Rudy Beck , Silvia Guterres, Adriana PohlmannISBN-13: 978-3642197918 Edition: 2011th SPRINGER

9. Dermatologic Complications with Body Art: Tattoos, Piercings and Permanent Make-Up .2010by Christa de Cuyper Maria Luisa CotaposISBN-13: 978-3642032912 SPRINGER

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4051	**SEMESTER**	4th
COURSE TITLE	DERMATOLOGY I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course,give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	

2. **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6,7 & 8 of the European Qualifications Frame work for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of this course is to provide students with knowledge in order to understand important dermatoses such as, acne, rosacea, various types of dermatitis, psoriasis, lichen planus, various forms of alopecia, pityriasis rosea and drug eruptions.
By viewing and discussing numerous images of these dermatoses, students will be better aware and familiar with cutaneous conditions which are common in daily practice. Description of inherited genetic disorders such as neurofibromatosis, tuberous sclerosis and lipoid proteinosis will also be made.
In addition, students will be able to take the initiative to comment on practical clinical issues.

General Competences

Taking in to consideration the general competences that the degree-holder must acquire (as this appear in the Diploma Supplement and appear below) at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Teamwork Working in an international environment Working in an interdisciplinary environment Production of new research ideas Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking Others…
Working independently Teamwork Working in an international environment Working in an interdisciplinary environment Showing social, professional and ethical responsibility and sensitivity to gender issues

3. SYLLABUS

1. Dermatitis (eczema)
2. Atopic dermatitis
3. Seborrheic dermatitis
4. Dyshidrotic eczema
5. Allergic contact dermatitis
6. Irritant contact dermatitis
7. Acrodermatitis enteropathica (zinc deficiency)
8. Lichen simplex chronicus
9. Drug eruptions (etiology, epidemiology)
10. Drug eruptions (clinical picture)
11. Drug eruptions (diagnosis and treatment)
12. Erythema multiforme
13. Erythema Nodosum
14. Erythema annulare centrifugum
15. Acute Urticaria
16. Chronic urticaria
17. Angioedema
18. Urticaria pigmentosa (cutaneous mastocytosis)
19. Acne (etiology, epidemiology)
20. Acne (clinical picture, clinical types)
21. Acne (treatment)
22. Isotretinoin
23. Hidradenitis suppurativa
24. Milia
25. Rosacea
26. Neurofibromatosis
27. Tuberous sclerosis
28. Lipoid proteinosis
29. Psoriasis (etiology, epidemiology)
30. Psoriasis (clinical picture, clinical types)
31. Psoriasis (treatment)
32. Reiter syndrome
33. Erythroderma
34. Lichen planus
35. Lichen sclerosus et atrophicus
36. Pityriasis rosea
37. Pityriasis lichenoides et varioliformis acuta

38. Pityriasis lichenoides chronica
39. Androgenetic alopecia
40. Alopecia areata
41. Scarring Alopecia
42. Hypertrichosis - Hirsutism
43. Frontal Fibrosing Alopecia
44. Congenital hair loss disorders

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning,etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, Communicationwithstudents*	Use of ICT in teaching, Communication with students by e mail and the web site of Biomedical Sciences Department. Use of e-class for slides' posting, scientific articles, useful links, questions; answers, exercises, etc.	
TEACHING METHODS *Themannerandmethodsofteachingare described indetail.* *Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures- interactive teaching	90
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oral examination,public presentation,laboratorywork,clinicalexaminationofpatient,artinterpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	• Multiple-choice questionnaires • True or False questions	

5. ATTACHED BIBLIOGRAPHY

1. Du Vivier A. Κλινική Δερματολογία με Έγχρωμες Εικόνες. Ιατρ. Εκδ. Πασχαλίδης, Αθήνα,

2012.

2. William J, Berger T, Elston D. Andrew's Diseases of Skin. Ιατρ. Εκδ. Πασχαλίδης, Αθήνα, 2011.

3. Ράλλης Ε. Λειτουργική μορφολογία του δέρματος κατά την εμφάνιση εξανθημάτων φαρμακευτικήςαιτιολογίας – Πειραματική μελέτη με το οπτικό και το ηλεκτρονικό μικροσκόπιο. Διδακτορικήδιατριβή. Αλεξανδρούπολη, 2005.

4. Bolognia J, Jorizzo J, Schaffer J. Dermatology. 3rd ed. Elsevier Saunders, 2012.

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΚΔ4041	**SEMESTER**	4
COURSE TITLE	CHEMISTRY & COSMETIC SCIENCE OF NATURAL PRODUCTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the creditsareawardedforthewholeofthe course, give the weekly teaching hour sand the total credits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
Theory	3	4
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	Specific Background Courses (SBC)
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/main/portfolio.php https://eclass.uniwa.gr/courses/AISTH140/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course for students is to understand the basic principles of chemistry and cosmetic science of natural products such as: plant species, essential oils, extracts, minerals, probiotics and marine ingredients, which have an effective action on skin care products.

The goal of the course is to teach students the basic principles of chemistry of plant ingredients (phytochemistry), how to isolate, process them, such as methods of distillation, production and utilization on a laboratory and industrial scale. The categories of natural ingredients used as raw materials and active ingredients in the production of cosmetic products and their dermo-cosmetic and therapeutic properties will be taught.

Learning outcomes

After the end of the course students will be able to know:

- The types of plants, marine and mineral ingredients used in cosmetic science.
- The basic chemical structure of the active substances which constitute the natural ingredients and where their action is due.
- The properties of natural and herbal ingredients and their cosmetic and pharmaceutical-therapeutic use and application.
- The methods of isolation, preparation (distillation, extraction, etc.) and their final processing.
- The way of their exploitation and the methods of use of plants, essential oils and other natural products in the industrial production of cosmetics, medical devices and pharmaceutical products.
- The method of evaluation and the techniques of physicochemical control of the quality of natural active substances.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently, team work, working in an interdisciplinary environment, working in an international environment, Search for, analysis and synthesis of data and information, with the use of the necessary technology, Production of new research ideas, Production of free, creative and inductive thinking	

3. **SYLLABUS**

1. Chemical classification and biosynthesis of substances contained in drugs and other natural ingredients (hydrocarbons, lipids, phenols and derivatives, tannins, flavonoids terpenoids, steroids, alkaloids).
2. Types of herbal remedies and their properties in cosmetic science.
3. Types of marine and mineral ingredients, used in cosmetic science.
4. ed extracts.
5. Hot continuous extraction (SoxhManufacturing process of aromatic and pharmaceutical plants. Cultivation- Harvesting- Drying - Cutting - Sorting.
6. Plant extracts. Maceration – Extraction - Decoctions - Infusion - Tinctures - Pilular (semisolid) extracts - Powderlet) -Aqueous-alcoholic extraction by fermentation- Microwave-assisted extraction.
7. *Supercritical fluid extraction- - Ultrasound extraction (sonication).* Extraction by distillation - Extraction by pressure. Industrial extractions.
8. Production of essential oils. Distillation with water - distillation with water & water vapor - distillation with water vapor. Industrial manufacturing of essential oils. Formation of a distillation unit. Distiller-Refrigerator-Separator.
9. "Concretes" - "Absolutes" - Pomates- Retinoids -Oil resins. Properties and differences. Isolation and production methods. Advantages and uses in cosmetology and pharmacy.
10. Chemical analysis and evaluation of the quality of plants and essential oils. Quality assessment techniques.
11. Methods of isolation, biotechnological process, efficiency improvement and production in industrial scale.
12. Efficacy, safety test and use in cosmetics and pharmaceutical industry.
13. Nutraceuticals, Dietary supplements and Herbal medicines.
14. Properties and uses of aromatic and medicinal plants and essential oils in production of dermocosmetics, medical devices products and pharmaceutical products.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of the learning process through e-class for the theoretical and laboratory part, videos of lectures pf the course under the auspices of the Institution, Exercises through e-class.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail. Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lecture	80
		10
		30
	Course total	*120*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	FINAL WRITTEN EXAMINATION (100%): Multiple choice questionnaires, open-ended questions, characterization of sentences as true or false, problem solving, complete of answers.

5. **ATTACHED** BIBLIOGRAPHY

- Suggested bibliography:

1. Τσιρίβας Ε., Βαρβαρέσου Α. Παπαγεωργίου Σ. Βασικές Αρχές Κοσμητολογίας ISBN: 978-960-394-920-6 ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2012.
2. Σκρουμπής Β. (1985) Αρωματικά Φυτά και Αιθέρια έλαια.
3. Χαντζοπούλου Π., Κατσιώτης Σ. (2013) Αρωματικά Φαρμακευτικά Φυτά και Αιθέρια Έλαια.
4. Sakamoto K., Lochhead R., Maibach H. and Yamashita Y. Cosmetic Science and Technology: Theoretical Principles and Applications, eBook ISBN: 9780128020548 Hardcover ISBN: 9780128020050, Elsevier (2017).
5. Hibbot H.W. Handbook of Cosmetic Science: An Introduction to Principles and Applications1483186474, 9781483186474, Elsevier (2016).
6. Review of Herbal Principles in Cosmetics: Properties and Mechanism of Action, Cindy K. Angerhofer, Aveda Corporation, Minneapolis, Minnesota Journal of Natural Products, 2011, 74 (4), pp 911–911
7. Barnes J, Andrson L., Phillipson D. (2002) Herbal Medicines. Pharmaceutical Press, London
8. Croteau R. (1992) Biochemistry of Monoterpens and Sesquiterpenes of the Essential Oils. In Herbs, Spices and Medicinal Plants. Vol. 1. L. Cracer and J. Simon Editors, Food Products Press, NY
9. Biotechnology of Natural Products. Schwab, Wilfried, Lange, Bernd Markus, Wüst, Matthias
10. Methods in Biotechnology. Natural Products Isolation, Second Edition Edited by Satyajit D. Sarker, Zahid Latif, and Alexander I. Gray. Humana Press, Totowa, NJ. 2005
11. Herbal Principles in Cosmetics. Properties and Mechanisms of Action. Editor: Dr. Roland Hardman, by Taylor and Francis Group, LLC, 2010

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4061-4062	**SEMESTER**	4
COURSE TITLE	Dermato – Cosmetic Science I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES AND LABORATORY EXERCISES	6 (3 LECTURES + 3 LABORATORY LABORATORY EXERCISES)	7
Add rowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://ocp.teiath.gr/modules/video/?course=AISTH_UNDE103 https://eclass.uniwa.gr/courses/AISTH111/ https://eclass.uniwa.gr/courses/AISTH116/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the impact of the active ingredients of dermato-cosmetics on the biochemical function of the skin. The mechanism of action, and the incorporation in dermato-cosmetics of substances acting against chrono-aging, environmental aging i.e photo-aging are described.

The goal of the course is for students to understand the principles of the design and development of dermato-cosmetic formulations with bioactive substances. Cosmetics that contain bio-active substances and possess a dermato-cosmetic activity along with dermatological properties and can support the activity of pharmaceuticals are often called dermato-cosmetics

Learning outcomes
After the end of the course students will be able to:

- Understand the mechanism of action of bioactive agents used in dermato-cosmetics
- Solve stability problems of the bioactive substances incorporated in the cosmetics
- Perform experiments and to determine the physicochemical stability of the finished products
- Know the criteria of the selection of the packaging material and to take under consideration potential incompatibilities between ingredients and packaging
- Design and develop in a laboratory scale, multi-functional formulation of advanced dermato-cosmetics-skin care products with active substances such as herbal extracts, skin anti-oxidants, peptides, healing compounds and delivery systems i.e cyclodextrines and liposomes for the increase of dermal absorption and the stability of active ingredients

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently, Team work, Working in an international environment, Working in an interdisciplinary environment, Decision-making (laboratory exercises), Respect for the natural environment, Production of new research ideas, Production of free, creative and inductive thinking

3. SYLLABUS

Theory

1. Face cleansing emulsions. Mechanism of action. Moisturization of keratin, Impact of surfactants to the hydration of skin keratin. Moisturizing agents. Emollients-Mechanisms of action. Hydrocarbons, Fatty alcohols, Esters, Herbal oils, Herbal extracts.
2. Hygroscopic agents. Incorporation in cosmetics-Mechanism of action. Multi-alcohols, Carbohydrates, acids and their salts.
3. Formulation of hand protective emulsions, body moisturizing emulsified lotions, vanishing creams and base-creams for the application of make-up products.
4. Multi-phase dispersed systems based on silicones. Anhydrous emulsions, non-emulsified cleansing products.
5. Introduction to delivery systems of active ingredients. Liposomes and cyclodextrins. Stability. Dermal absorption of the actives through delivery systems. Application to cosmetics and skin biomedical products.
6. Dermato-cosmetics. New active ingredients, skin anti-oxidants for the treatment of aging, environmental aging i.e. photoaging. Mechanism of action.
7. Oligopeptides in anti-aging products of topical skin application. Incorporation, stability, dermal absorption. Peptides with anti-oxidant activity, growth-factors mimicking peptides, decorin analogs, peptides “acting” on neurotransmitters.
8. Biochemistry of melanin synthesis. Skin lighteners-mechanism of action.
9. Healing. Healing agents and actives. Healing peptides. Herbal ingredients with healing activity, Silicones as healing films.
10. Dermal permeability enhancers. Mechanism of action.
11. Cellulitis, active ingredients for the topical treatment cellulitis. Mechanism of action.
12. Toning and astringent lotions. Herbal constituents and extracts for alcoholic and non-alcoholic lotions.
13. Acne. Products for acne. Mechanism of action of active ingredients. Antiseptic ingredients, exfoliating products, sebum-controlling agents, anti-inflammatory agents.
14. Introduction to the packaging of cosmetic products. Comparison of advantages and disadvantages between plastic packaging and glass. Propellants. Incompatibility between active ingredients and packaging.

Laboratory exercises

1. Determination of type of emulsions
2. Solubilization. Techniques for the a) selection of the best solubilizer for a given perfume and) b the minimal concentration of the solubilizer for the solubilization of a the perfume.
3. Stability of cosmetic products. Determination of water in cosmetic products. Thermal method. Azeotropic distillation.
4. Rheology. Determination of the viscosity. Newtonian and non-Newtonian products
5. Emulsified cleansing lotion. Development, determination of the viscocity, rheology diagrams, pH measurement.

6. Facial liquid cleanser-one phase. Development, determination of viscosity-comparison of the rheological properties with emulsified systems, rheology diagrams, pH measurement.
7. Exofliating cream. Development, incorporation of microbeads (polyethylene or herbal)
8. Liquid make-up. Development. Techniques for the suspension of powders in emulsified products.
9. Anti-aging cream. Incorporation of a tocopherol-cyclodextrin system. Stability-Accelerated test.
10. Anti-aging cream, Incorporation of all-trans retinol to liposomes. Stability study. Accelerated test.
11. Anti-aging serum. Incorporation of liposomal peptides in gel. Viscosity enhancers and liposomes.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of the learning process through e-class for the theoretical and laboratory part, videos of the experiments of the course under the auspices of the Institution, Exercises through e-class. Laboratory education
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** / ***Semester workload*** Lecture: 50 Laboratory practice: 54 Educational visit: 10 Independent study: 60 Course total: *174*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Theory Language Greek Final exam: multiple choice, open-ended questions, characterization of sentences as True or False, problem solving 100 % Or Final exam multiple choice, open-ended questions, characterization of sentences as True or False, problem solving 60% and public presentation 40% Laboratory Language Greek 1. Laboratory work-results/experiment. Written work Total 30% 2. Questionnaires 35 % 3. Final exam: multiple choice, open-ended questions, characterization of sentences as True or False, problem solving 35 %

5. **ATTACHED** BIBLIOGRAPHY

- Suggested bibliography:

1. Tsirivas E., and Varvaresou A. and Papageorgiou S. Applied Cosmetic Science-Dermato-cosmetics ISBN 978-960-583-151-6. PARISIANOS SA, (2016).
2. Tsirivas E., Papageorgiou S and Varvaresou A. Laboratory exercises of Development of dermato-cosmetic products (2019) University of West Attica.
3. Sakamoto K., Lochhead R., Maibach H. and Yamashita Y. Cosmetic Science and Technology: Theoretical Principles and Applications, Hardcover ISBN: 9780128020050, eBook ISBN: 9780128020548, Elsevier (2017).
4. Schlossman M.L. The Chemistry and Manufacture of Cosmetics. Vol 2 Formulating ISBN-13: ISBN-13:978-1932633474 4th edition, Allured Publishing Co. USA (2008).
5. Schlossman M.L. The Chemistry and Manufacture of Cosmetics. Vol 3 Ingredients ISBN-13: 978-0931710773 4th edition, Allured Publishing Co., USA (2008).
6. Dayan N. and Kromidas L. Formulating, Packaging, and Marketing of Natural Cosmetic Products. Print ISBN: 9780470484081 eBook ISBN: 9781118056806, John Wiley & Sons, Inc. (2011).
7. Schueller R. and Romanowski P. Beginning Cosmetic Chemistry. ISBN-13: 978-1932633535 3rd edition, Allured Publishing Co., USA (2009).

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4011	**SEMESTER**	4
COURSE TITLE	Nutrition and Skin		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawarded for the whole of the course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background, special background,specialisedgeneral knowledge,skillsdevelopment*	SBC
PREREQUISITE COURSES:	..
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	…
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/BISC218/

2. **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the study of valid nutritional knowledge and the application of modern dietary methods for the healthy aesthetic improvement of face and body.

The objective of the course is for students to acquire the basic principles of nutrition and special knowledge on Aesthetic Dietetics.

After the end of the course students will be able to:

• assess the eating habits of the person concerned.

• advise on necessary nutritional interventions, based on the aesthetic problem and the general health condition of the person concerned.

• Calculate the ideal weight, daily energy needs, as well as nutrient needs

• Evaluate and improve an individual's eating habits and develop a healthy diet.

• Know the eating habits that can help treat obesity and cellulite

• Know the dietary supplements recommended for the treatment of obesity and cellulite

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work, • Teamwork, • Work in an interdisciplinary environment, • Work in an international environment	

3. **S**YLLABUS

1. Antioxidant and anti-aging properties and sources of vitamins, with emphasis on vitamins A, C, D and E.

2. Minerals and trace elements critical for healthy skin.

3. The protective action of biophenols (polyphenols) and other phytochemical components (flavonoids, chlorophyll) of food.

4. Carbohydrates - cellulose, proteins - collagen, amino acids - melatonin, fats (omega-3, omega-6, omega-9), stanols - sterols and their importance for the health of the human body.
5. Probiotics and prebiotics.

6. Important foods for enriching the diet with bioactive ingredients (oats, olive oil, soy, honey, seafood, fruits and vegetables)

7. Aromatic and medicinal plants - herbs, food pesticides - food cosmetics

8. Sweeteners and preparations for the control of obesity.

9. Principles and rules of healthy eating habits.

10. Nutritional standards and rules - Food pyramid

11. Energy needs of the human body - energy balance.

12. Chemical diets, acidic and alkaline foods.

13. Nutrition of athletes for a shapely and strong body.

14. Food and water as components of a healthy lifestyle in relation to dietary habits, heredity, lifestyle, stress, sleep and physical activity.

15. Nutritional supplements with aesthetic applications.

16. Nutrition / health claims and labels of food supplements.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face Distance learning,etc.*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	• Use of ICT in teaching • Use of the e-mail and the website (e class) for communication with the students

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Lectures	50
Study-Essay writing	40
Course total	90

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

LANGUAGE: GREEK

EVALUATION METHODS
70% Written Assessment (Multiple Choice Test, Short Answer Questions)
30% Essay

5. **ATTACHED** BIBLIOGRAPHY

GREEK

1. Σφλώμος Κ., Βιολειτουργικά Τρόφιμα, Πρόσθετα και Συμπληρώματα Διατροφής, Εκδόσεις ΝΟΤΑ-Κ.Αλεξίου, Αθήνα 2018, ISBN 978-618-83264-6-0
2. Πλέσσας Σ. - Κίντζιου Ε., Παχυσαρκία και Κυτταρίτιδα, Εκδόσεις Φάρμακον-τύπος, Αθήνα 2007, ISBN 978-960-89845-0-9
3. Διαιτητική του Ανθρώπου, Σταύρος Τ. Πλέσσας, ΕΛΕΝΗ ΠΛΕΣΣΑ, 2010
4. Διατροφή και Υγεία, Χανιώτης Δημήτριος, Κ. & Ν. ΛΙΤΣΑΣ Ο.Ε., 2014
5. Σφλώμος Κ., Διατροφή του Ανθρώπου, Εκδόσεις ΝΟΤΑ-Κ.Αλεξίου, Αθήνα 2017, ISBN 978-618-83264-2-2.
6. Εγχειρίδιοδιατροφής, Biesalski Hans - Konrad,Grimm Peter, BROKEN HILL PUBLISHERS LTD, 2008
7. Μόρτογλου Τ. - Μόρτογλου Κ., Διατροφή από το σήμερα στο Αύριο, Εκδόσεις Γιαλλελής, Αθήνα 2002, τόμος Ι , ΙΙ.
8. Ζαμπέλας Α., Διατροφή στα στάδια της ζωής, Εκδόσεις Πασχαλίδης, Αθήνα 2002, Διατροφή από το σήμερα στο Αύριο
9. Τριχοπούλου Α., Ελληνικοί πίνακες συνθέσεως τροφίμων, Εκδόσεις Παρισιάνος.
10. Χουρδάκης Μ., Κούβελας Δ., Αρχές Κλινικής Διατροφής και διατροφικής θεραπευτικής, Εκδόσεις Ροτόντα, Θεσσαλονίκη 2007, ISBN 978-960-98037-1-7.

FOREIGN

1. Nutrition and Skin, editor Pappas A. - Springer Nature, N.Y 2011, ISBN 978-1-4419-7967-4
2. Nutrition for healthy skin, editors Krutmann, J., Humbert P., 2010, ISBN 978-3-642-12264-4

3. Human Nutrition and Dietetics, J.S. Garrow, WPT James, Churchil Livingstone
4. L.K Mahan, S Escott' Stamp, Krause's Food Nutrition and Diet Therapy, 10th edition 2000 (ήτηνπιόπρόσφατηέκδοση)
5. Elmadfa I, Leitzmann C, Ernaehrung des Menschen, UTB, Ulmer (Eugen) Verlag, 1999
6. Life Span Nutrition conception through life, Sharon Rady Rolfes, Linda Kelly DeBruyne, Eleanor Noss Whitney
7. Recommended Dietary Allowances, 10th Edition, National Academy Press, Washington D.C.
8. Nutrition concepts and controversies, Frances Sizer, Eleanor Whitney, Internatio

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4021-4022	**SEMESTER**	4
COURSE TITLE	Spa Therapy- Thermalisation		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLYT EACHING HOURS**	**CREDITS**
Lectures	3	7
Laboratory	2	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background ,special background,specialisedgeneral knowledge,skillsdevelopment*	SBC
PREREQUISITE COURSES:	..
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	…
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/BISC214/

2. LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to teach students the thermal wealth and the effects on the body of the thermal springs.
The objective is for students to be able to utilize the natural properties of water and its products in dealing with aesthetic problems.
Learning results
Students after the end of the course will be able to:
To prepare hydrotherapy - thalassotherapy programs
To apply hydrotherapy - thalassotherapy programs for the treatment of aesthetic problems
To evaluate the quality of the services offered in Spas and Thalassotherapy Units
To combine the applications of Dermoaesthetics with the Thermal therapies

General Competences

Taking into consideration the general competences that the degree-holder must acquire

(as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work, • Teamwork, • Work in an interdisciplinary environment, • Work in an international environment	

3. SYLLABUS

Theoretical part

• History of the method

• Conceptual definitions

• Thermal natural resources

• Thermal hydrotherapy

• Applications of thermal natural resources:

A. Internal hydrotherapy

B. External hydrotherapy

C. Pilotherapy

D. Thalassotherapy

E. Spa

• Spa Techniques

• Therapeutic indications - contraindications of natural resources

• The thermometallic and thermal springs in Greece. Geographical distribution.

1. Thermal therapy in mythical and ancient times, according to historians, Roman period, Byzantine period

2. Chemistry of Thermal Mineral and Drinking Waters

3. Pharmacological properties of thermal waters

4. Principles of Thermal Hydrotherapy

5. Thermal springs of Greece and the organized centers per prefecture

6. Spa tourism in Greece

7. Forms of Hydrotherapy and types of baths

8. Internal - External hydrotherapy

9. Principles of Thalassotherapy & Spa

10. Indications & contraindications of hydrotherapy - thalassotherapy

11. Legal Framework - Regulations for the Administration and Operation of Hydrotherapy Spas

<u>Laboratory Part</u>

1. Hygiene of Hydrotherapy Spas - Thalassotherapies & Spa

2. Principles of Disinfection and Antiseptic in Hydrotherapy and Spas

3. Layout & Technique of Hydrotherapy & Thalassotherapy Areas

4. Historical Spa client - treatment protocol

5. Dermatotherapy and Thermal Aesthetics. Aesthetic Problems treated with Spa Therapy-Thalassotherapy

6. Forming a Hydrotherapy program

7. Forming a Thalassotherapy Program

8. Application of Dino Bath - Artificial rain - principles of massage

9. Application of Sweating Means

10. Hydrotherapy techniques and manipulations

11. Thalassotherapy techniques and manipulations

12. Combined applications of Hydrotherapy - Thalassotherapy & Alternative therapies

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use ofI Ctinteaching,laboratory education, communicationwithstudents*	• Use of ICT in teaching • Use of the e-mail and the website (eclass) for communication with the students
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** / ***Semester workload*** Lectures — 70 Study-Essay writing — 50 Laboratory — 54 Course total — 174
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	LANGUAGE: GREEK EVALUATION METHODS 1. Theoritical part 70% Written Assessment (Multiple Choice Test, Short Answer Questions) 30% Essay 2. Laboratory 30% Written Assessment (Multiple Choice Test, Short Answer Questions) 20% Worksheets 50% Practice

5. ATTACHED BIBLIOGRAPHY

GREEK

1. Σφλώμος Κ., Βιολειτουργικά Τρόφιμα, Πρόσθετα και Συμπληρώματα Διατροφής, Εκδόσεις ΝΟΤΑ-Κ.Αλεξίου, Αθήνα 2018, ISBN 978-618-83264-6-0
2. Πλέσσας Σ. - Κίντζιου Ε., Παχυσαρκία και Κυτταρίτιδα, Εκδόσεις Φάρμακον-τύπος, Αθήνα 2007, ISBN 978-960-89845-0-9
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4. Διατροφή και Υγεία, Χανιώτης Δημήτριος, Κ. & Ν. ΛΙΤΣΑΣ Ο.Ε., 2014
5. Σφλώμος Κ., Διατροφή του Ανθρώπου, Εκδόσεις ΝΟΤΑ-Κ.Αλεξίου, Αθήνα 2017, ISBN 978-618-83264-2-2.
6. Εγχειρίδιοδιατροφής, Biesalski Hans - Konrad,Grimm Peter, BROKEN HILL PUBLISHERS LTD, 2008
7. Μόρτογλου Τ. - Μόρτογλου Κ., Διατροφή από το σήμερα στο Αύριο, Εκδόσεις Γιαλλελής, Αθήνα 2002, τόμος Ι , ΙΙ.
8. Ζαμπέλας Α., Διατροφή στα στάδια της ζωής, Εκδόσεις Πασχαλίδης, Αθήνα 2002, Διατροφή από το σήμερα στο Αύριο
9. Τριχοπούλου Α., Ελληνικοί πίνακες συνθέσεως τροφίμων, Εκδόσεις Παρισιάνος.
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FOREIGN

1. Nutrition and Skin, editor Pappas A. - Springer Nature, N.Y 2011, ISBN 978-1-4419-7967-4
2. Nutrition for healthy skin, editors Krutmann, J., Humbert P., 2010, ISBN 978-3-642-12264-4
3. Human Nutrition and Dietetics, J.S. Garrow, WPT James, Churchil Livingstone
4. L.K Mahan, S Escott' Stamp, Krause's Food Nutrition and Diet Therapy, 10th edition 2000 (ήτηνπιόπρόσφατηέκδοση)
5. Elmadfa I, Leitzmann C, Ernaehrung des Menschen, UTB, Ulmer (Eugen) Verlag, 1999
6. Life Span Nutrition conception through life, Sharon Rady Rolfes, Linda Kelly DeBruyne, Eleanor Noss Whitney
7. Recommended Dietary Allowances, 10th Edition, National Academy Press, Washington D.C.
8. Nutrition concepts and controversies, Frances Sizer, Eleanor Whitney, Internatio

9.4.2 5th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETICS AND COSMETOLOGY		
LEVEL OF EDUCATION	UNDERGRADUATE		
LESSON CODE	**5011-5012**	**SEMESTER OF STUDIES**	**5th**
COURSE TITLE	DERMATO AESTHETICS II		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Theoretical and Laboratory	6 (3 T +3 L)	7

COURSE TYPE	SC
PREREQUISITE COURSES:	
LANGUAGE OF TEACHING AND EXAMINATION:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
ELECTRONIC COURSE PAGE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes
Aim and course objective: Students should understand the etiopathogenetic mechanisms of acne appearance by skin type. More specifically, they should: Be able to clinically classify the different types of acne. Treat the types of symptomatic acne that they are allowed to treat. Direct the patient with acne skin type in the respective medical specialty for the treatment of different types of acne that is not allowed to be treated by the Aestheticians. Understand and appreciate the need for Aesthetician -Acne Doctor cooperation to achieve healing. Apply all methods and stages of symptomatic acne treatment. Treat acne at the back and chest. Understand the etiopathogenetic mechanisms of dehydration, aging, photo aging, oxidative stress by skin type. Diagnose and differentiate between dehydration, aging, photo aging, oxidative stress, to assess the case and apply treatment protocols. Understand the value of essential oils for the treatment of skin problems and to apply aromatherapy on a case by case basis. Be familiar with rehabilitation schemes with application of essential oils and appropriate action. Understand their role and involvement in the treatment of adverse events resulting from antineoplastic therapy and radiation and apply rehabilitation regimens. **Learning Outcomes:** After the end of the course students will be able to: 1. correctly assess the case, to make a clinical aesthetic classification of acne, to apply the methods of symptomatic treatment of acne. 2. treat common acne (comedogenic, superficial, inflammatory common acne, pustular acne in chin in women or premenstrual acne in adult women, pustular acne, lightning acne, occupational (chloracne – acne from oils, tropical acne) acne from friction. 3. cooperate with the respective medical specialties, in order to achieve the treatment. Cystic acne. Rosacea acne. Androgenetic (hormonal) acne. Apply all the

techniques taught in the laboratory safely and successfully.

4. assess acne cases and apply appropriate recovery regimens.
5. prevent phototoxic and photoallergic dermatitis during the application of third and fourth stage of symptomatic treatment of acne as well as from simultaneous use of phototoxic drugs.
6. prevent the side effects of keratolytic ingredients using in acne.
7. deal with scars, discolorations and lesions after curing acne.
8. recommend medical tattoo application and to be able for a satisfactory psychological approach to patients with acne. Students to understand the etiopathogenetic mechanisms of dehydration, aging, photoaging, oxidative stress and classify them clinically.
9. diagnose and differentiate dehydration, to make assessment of the case and to apply treatment protocols for the treatment of dehydration. Aging, photoaging oxidative stress to design rehabilitation schemes and apply them.
10. know what oncology Aesthetics means and to deal with side effects resulting from antineoplastic therapy and radiation.
11. understand the value of essential oils for the repair of skin problems and apply aromatherapy on a case by case basis. They should be familiar with rehabilitation schemes with application of essential oils and appropriate action.

General Abilities

Autonomous work,

Teamwork,

Work in an interdisciplinary environment,

Working in an international environment

(3) SYLLABUS

Theoretical Part of the Course

1. Skin types and clinical forms of acne. Classic and newer methods of clinical aesthetic classification of acne.
2. Reference to common acne (comedogenic, superficial, neonatal).
3. Symptomatic treatment by aestheticians.
4. Reference to the types of acne.
5. Symptomatic treatment by aestheticians.
6. Rosacea acne.
7. Symptomatic treatment by the aesthetician before, during and after the end of medical treatment.
8. First stage, second stage, third stage of symptomatic treatment of acne.
9. Fourth stage of symptomatic treatment. Application of ultraviolet radiation. Fifth stage of symptomatic treatment of acne. Skin restoration after healing. Evaluation of repeated application of symptomatic treatment to avoid recurrence of acne.
10. Acne of the back - chest. Types of medical tattoos. Psychological approach of patients with acne.
11. Skin dehydration, Skin aging, Photoaging, Oxidative stress: etiopathogenesis, clinical

picture, aging theories, histology, epidemiology, forms. Ways and methods of applying cosmetic products to prevent and restore them. Differential diagnosis. Case assessment. Treatment protocols. Follow up. Prognosis. Outcome prediction. Rehabilitation schemes

12. Aesthetic applications of essential oils. Aromatherapy.

Laboratory Part of the Course

1. First, second, third, fourth, fifth stage of symptomatic treatment of acne categories by Aesthetician.
2. Clinical exercise of 1st, 2nd, 3rd, 4th, 5th stage.
3. Clinical application of acne skin repair method and scheme by type of acne.
4. Treatment and therapy protocols. Differential diagnosis. Follow up.
5. Back - chest acne.
6. Rosacea acne, clinical practice.
7. Clinical exercise of skin restoration after healing.
8. Treatment of scars, discolorations, hydration status.
9. Clinical applications in acne with incomplete or incorrect treatment.
10. Skin dehydration clinical practice: treatment and therapy protocols.
11. Aging, Photoaging of the skin clinical exercise: treatment and therapy protocols.
12. Facial aromatherapy with appropriate action on dehydration, aging, photoaging, oxidative stress, discolorations, acne, scars.

(4) TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>METHOD OF TEACHING</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</td><td>Use of ICT in teaching
Use of the e-mail and the website of the Department for informing the students
Use of the e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.</td></tr>
<tr><td>TEACHING ORGANIZATION</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td></td></tr>
<tr><td>Group autonomous laboratory work.</td><td></td></tr>
<tr><td>Independent study</td><td></td></tr>
<tr><td>Visits to application locations</td><td></td></tr>
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	Course Set	**210**
STUDENT EVALUATION	LANGUAGE: GREEK EVALUATION METHODS THEORETICAL PART: 100% Written Assessment (Multiple Choice Test, Short Answer Questions) LABORATORY PART: 100% Written examination	

(5) ATTACHED BIBLIOGRAPHY

Greek

1. Kefala B., The treatment of acne and its symptomatic treatment by the Aesthetician, published by the same, 2004, ISBN 960-90857-0-9.
2. Kefala V., Facial Aesthetics I, published by the same, 2007, ISBN 960-90857-1-7.
3. Riga M. - Gligori S., Aesthetic Electrotherapy, published by Ath. Stamouli, 2006.

Foreign

1. The Acne Cure Hardcover – May 2,2013 by Brenda Adderly, Terry J. Dubrow. SAUNDERS ELSEVIER. ISBN 157954 -742-7
2. Acne by William J. Cunliffe ISBN 0 9482 6939-1, CRC Press, 12 Απρ 2009
3. Acne: Morphogenesis and Treatment byG. Plewig, A.M. Kligman ISBN -13: 978-3-642-96248-6 SPRINGER
4. Acne Vulgaris by Alan R. Shalita, James Q. Del Rosso, Guy Webster CRC Press, 21 Μαρ 2011
5. Procedures in Cosmetic Dermatology Series: Non-Surgical Skin Tightening and Lifting, 2008 by Murad Alam MD Jeffrey S. Dover MD. ISBN-13: 978-1416059608.SAUNDERS ELSEVIER
6. Nanocosmetics and Nanomedicines: New Approaches for Skin Care Hardcover – May 4, 2011 by Ruy Beck, Silvia Guterres, Adriana Pohlmann ISBN-13: 978-3642197918 . SPRINGER
7. Dermatologic Complications with Body Art: Tattoos, Piercings and Permanent Make-Up Hardcover .2010 by Christa de Cuyper Maria Luisa Cotapos ISBN-13: 978-3642032912 SPRINGER
8. Skin Moisturization, Second Edition (Basic and Clinical Dermatology) Hardcover – March 23,2009 by Anthony V. Rawlings (Editor), James J. Leyden (Editor) ISBN-13: 978-1420070941 ISBN-10: 1420070940 Edition: 2nd Informa Health Care
9. Cosmeceutical Science in Clinical Practice (Series in Cosmetic and Laser Therapy) 2010 by Neil S. Sadick Mary Lupo, Diane S. Berson Zoe Diana Draelos ISBN-13: 978-0415471145 Edition: 1st Informa Health Care

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5021-5022**	**SEMESTER**	5th
COURSE TITLE	DERMATOLOGY II - VENEREOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.I fthecreditsareawardedfort he whole of the course,givet he weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures and Laboratory	5 (3+2)	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	

2. LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of the course is to provide students an adequate image of:

- viral
- bacterial
- parasitic sexually transmitteddiseases,

especially on:

- clinical aspects,
- laboratory investigation,
- preventive measures and treatment options

Students will be taught contagious infectious diseases and conditions such as:

- folliculitis
- impetigo

- erythrasma
- pitted keratolysis
- fungal infections
- onychomycosis
- Pediculosis and Pthiriasis

Viewing numerous images will help students become familiar with:

- Benign conditions (nevus, skin tags, seborrheic keratoses)
- Skin cancers (melanoma, squamous cell carcinoma, basal cell carcinoma)
- Autoimmune diseases (vitiligo, pemphigus, bullous pemphigoid, dermatitis herpetiformis)
- Inflammatory diseases (psoriasis, lichen planus, Reiter's syndrome)

They will have knowledge about:

- pigmented and achromic nevus,
- common skin neoplasms

Upon completion of the courses the students will have understood:

- The clinical picture of above dermatoses
- Their transmission
- Protection, avoiding transmission and counseling patients accordingly
- Awareness and ability to evaluate ''suspicious'' lesions or skin changes

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

- Independent work
- Teamwork
- Working in an international environment
- Work in an interdisciplinary environment
- Showing social, professional and ethical responsibility and sensitivity to gender issues

3. SYLLABUS

1. Impetigo
2. Folliculitis
3. Furunculosis – carbuncle
4. Staphylococcal sycosis
5. Erysipelas
6. Cellulite
7. Erythrasma
8. Pitted keratolysis
9. Cutaneous anthrax
10. M. marinum cutaneous infection
11. Syphilis (primary, secondary, latent, tertiary)
12. Molluscum contagiosum
13. Genital warts
14. Warts
15. Herpes Simplex I
16. Genital herpes
17. Varicella zoster
18. Pediculosis and Pthiriasis
19. Scabies
20. Animal scabies
21. Cutaneous leishmaniosis
22. Favus
23. Dermatophytosis
24. Candidiasis
25. Tinea versicolor
26. Onychomycosis
27. Nevus
28. Skin tags (acrochordons)
29. Seborrheic keratoses
30. Precancerous skin lesions
31. Actinic keratoses
32. Basal cell carcinoma
33. Squamous cell carcinoma
34. Melanoma
35. Bowen disease
36. Erythroplasia of Queyrat
37. Vitiligo
38. Pemphigus
39. Bullous pemphigoid
40. Dermatitis herpetiformis
41. Discoid lupus erythematosus

4. **TEACHING and LEARNING** METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face
USE OF INFORMATION AND C OMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Teaching laboratory education Communication with students (e-mail, e-class)

TEACHING METHODS	***Activity***	***Semester workload***
Themannerandmethodsofteachingaredescribed indetail. *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	Lectures- interactive teaching	90
	Laboratory	54
	Course total	144

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	• Multiple-choice questionnaires • True or False questions

5. **ATTACHED** BIBLIOGRAPHY

1. Du Vivier A. Κλινική Δερματολογία με Έγχρωμες Εικόνες. Ιατρ. Εκδ. Πασχαλίδης, Αθήνα, 2012.

2. William J, Berger T, Elston D. Andrew's Diseases of Skin. Ιατρ. Εκδ. Πασχαλίδης, Αθήνα, 2011.

3. Bolognia J, Jorizzo J, Schaffer J. Dermatology. 3rd ed. Elsevier Saunders, 2012.

4. ΚουμαντάκηΜαθιουδάκηΕ. Μυκητιασικέςλοιμώξειςτουδέρματος. Εκδ. Καυκάς. Αθήνα, 2002

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Health and Care Sciences		
DEPARTMENT	Department of Biomedical Sciences, (Direction of Aesthetics and Cosmetology)		
LEVEL OF EDUCATION	UNDERGRADUATE		
LESSON CODE	**5051-5052**	**EDUCATION SEMESTER**	**5th**
LESSON TITLE	MAKE UP – PERMANENT MAKE UP		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Theoretical And Laboratory lesson	6 (4 THEORY +2 LABORATORY LESSON)	7

LESSON TYPE	SC
PREREQUISITE COURSES:	
TEACHING LANGUAGE AND EVALUATION:	GREEK
ERASMUSSTUDENTSLESSO	YES
WEBSITE (URL)	

2. LEARNING OUTCOMES

Learning Outcomes
Comprehension of facial architecture from students in order to be capable to apply make up techniques fordeformitiescoverage and peculiarities correction. Comprehension of color meaning, chromatology rules and lightening part in make up

application.

Comprehension of airbrush techniques application.

Being capable to apply make-up techniques according to every case and for every circumstances.

Understand classical and modern styles of characters from older times and folklore theatrical performances in every continent and every tribe.

Comprehension of peculiarities of human characteristics for tribal make up.

Apply contouring with prosthetics combination for actor's transformations and distortions.

Student comprehension for paramedical tattoo and permanent make up (PMU) in oncological and non-oncological patients.

To get acquainted with the material and technical infrastructure of the method and the ways of its application. To be informed about its indications and contraindications.

To be able to apply medical permanent make up to correct skin problems such as scars and discoloration.

Be able to apply permanent make up- scalp micropigmentation to treat skin conditions such as alopecia.

Be able to apply camouflage make up for corrective applications.

Be able to apply dry needling and microblading.

Be familiar with permanent make up removal techniques such as chemical use methods, laser picosecond methods etc.

To develop skills of camouflage, make up application on skin diseases (vitiligo-psoriasis-burn, etc.) and to use these methods in paramedical corrective applications.

General Competences
Autonomous work
Teamwork
Working in an international environment
Work in an interdisciplinary environment

3. SYLLABUS

<u>Theoretical part</u>

1. Make up distinction. Study of facial characteristics. Interventions, peculiarities correction.

2. Lighting and study of colors.
3. Face and body make up applications with airbrush use.
4. Case-by-case make up applications according to the technological developments of make up sectors.
5. Styles of theatrical make up across the continents & through the centuries.
6. Make up application of classical- modern ballet, modern theater, television and cinema.
7. Types, composition of special effects. Use, installation, and removal of special effect materials.
8. Side effects from special effects and paints. Protection against occupational hazards.
9. Application of paramedical permanent make up in oncological and non-oncological patients.
10. Material and technical infrastructure of the method - ways of application - indications-contraindications.
11. Paramedical permanent make up (PMU) to correct skin problems such as scars and discoloration.
12. Paramedical permanent make up (PMU) for the treatment of skin conditions such as alopecia.
13. Methods for removing unwanted tattoos (chemical methods, picosecond, etc.)
14. Medical permanent make up (PMU) to restore the nipple/areola after mastectomy.
15. Camouflage make up on skin diseases (vitiligo-psoriasis-burn, etc.) and use these methods in paramedical corrective applications.

Laboratory part

1. Study of facial architecture. Implementation of interventions, correction of peculiarities. Application and study of make up colors.
2. Face and body make up with airbrush use.
3. Case by case make up application, according to the technological developments of make up sectors.
4. Application of representative theatrical chirping techniques across continents & across the centuries.
5. Application of classical - modern ballet make up, modern theater, television and cinema make up.
6. Application of paramedical permanent make up (PMU) in oncological and non-oncological patients.
7. Material and technical infrastructure of the method - method of application - indications-contra indications.
8. Application of paramedical permanent make up to correct skin problems such as scars and discolorations.
9. Application of paramedical permanent make up (PMU)/micropigmentation for the treatment of skin conditions such as alopecia.
10. Application of methods for removing unwanted tattoos (chemical methods, laser removal with picosecond lasers, etc.)
11. Medical permanent make up (PMU) application to restore the areola after mastectomy.
12. Use of camouflage make up on skin diseases (vitiligo-psoriasis-burn, etc.) and use these methods in paramedical corrective applications.

4. TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>ACCOMPLISHMENT METHOD</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</td><td>

Use of Computer Supported Collaborative Learning in teaching methods.
Use of email and website of the Department for student information.
Use of e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc. Use of ICT in teaching.

Use of the e-mail and the website of the Department for informing the students.
Use of the e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.
</td></tr>
<tr><td>TEACHING ORGANIZATION</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures</td><td></td></tr>
<tr><td>Laboratory Exercises</td><td></td></tr>
<tr><td>Group, autonomous
laboratory work</td><td></td></tr>
<tr><td>Independent study - Preparation of a study</td><td></td></tr>
<tr><td>Visits to places of application of advanced techniques applied in the course</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course Set</td><td>174</td></tr>
</table>
</td></tr>
<tr><td>STUDENT EVALUATION</td><td>EVALUATION METHODS

THEORETICAL PART:

50% Written Assessment (Multiple Choice Test, Short Answer Questions)

50% Public Presentation of Work

LABORATORY PART:

100% Written evaluation</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

Greek

- "Facial and body make up technique" - Τεχνική ψιμυθίωσης προσώπου και σώματος, Δικαιούλια Ελένη, ΕΚΔΟΣΕΙΣ ΠΑΠΑΖΗΣΗ ΑΕΒΕ, 2008
- "Performing arts makeup" Μακιγιάζ παραστατικών τεχνών, Α. Τσιγώνια, Ε. Μικελάτου, εκδόσεις Δεσμός, Αθήνα 2010 Ξανθάκης Σπυρίδων, Μόνιμο μακιγιάζ, Εκδόσεις Καυκάς, 2009

Foreign

- Paramedical micropigmentation Plastic Surgery, 5rd Edition, Brown & Co. Boston 2014
- The Ultimate Guide to looking and feeling great while living with cancer, Ramy Gafni 's, 2005.
- The Oxford Illustrated History of Theatre, Volume 2,John Russell Brown,Oxford University Press 2017
- The Oxford Illustrated History of Theatre, Volume 1,John Russell Brown,Oxford University Press2016
- Hoffmann, H., Gilbert, M. καιA. Ortega, Micropigmentation Technology, Methology and practice, Ισπανία, Videocinco. 2015
- Christa de Cuyper, Maria Luisa Cotapos, Dermatologic Complications with Body Art, Springer Science & Business Media, 2009
- Maine. Bureau of Health, Rules Relating to Micropigmentation Practitioners
- C. William, MD. Crab, W. James, MD. Smith, Plastic Surgery, 3rd Edition, Brown & Co. Boston 2014
- Jannice Hopkins Tanne, Body Art: Marks of Identity, American Museum of Natural History, NY, 2012

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	5041	**SEMESTER**	5
COURSE TITLE	Adverse effects of cosmetic products-Toxicology		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsare awarded for the whole of the course,give the weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHIN G HOURS**	**CREDITS**
Lectures		3	4
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SBC		
PREREQUISITE COURSES:	..		

LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	…
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/BISC261/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aim and objective of the course:

The aim of the course is for students to understand the side effects of cosmetics which are now widely used by both women and men.

The objective of the course is to teach students the basic principles of side effects from the use of cosmetics.

After the end of the course, students will be able to:

- ✓ Recognize the appearance of the side effects on the skin
- ✓ To manage the side effects of cosmetics within their specialty.
- ✓ Be aware of the toxicity caused by cosmetics
- ✓ Evaluate the safety of the cosmetic to be used based on the toxicity of the individual components
- ✓ Know the process of submitting a file for the safety of cosmetics

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…

	…….
• Autonomous work, • Teamwork, • Work in an interdisciplinary environment, • Work in an international environment	

3. SYLLABUS

1. Historical background of cosmetics. Frequency of skin reactions from cosmetics.

2. Identification control of "absorption energies". Reference to skin tests to evaluate the safety of substances contained in cosmetics. Coated skin tests (PATCH-TEST). Open tests. Photo tests.

3. Reference to cosmetic skin reactions. Acute irritant dermatitis, allergic contact dermatitis, photodermatitis.

4. Side effects from the use of cosmetics, special categories such as: Facial cleansing products, Creams, Face masks, Sunscreen products, Bleaching agents, Coating products and powders, Lip cosmetics, Products for and after shaving.

5. Side effects from: eye shadows, use of mascara, eye pencils, from synthetic lashes. 6. Side effects from: Products for the bath, Products for after the bath, From cosmetic products for the hands, Colognes-perfumes, Deodorants-antiperspirants, Sunscreens, Depilatories.

7. Side effects from: Products for the care and protection of the skin of infants and young people, Risks and protection of children and the elderly from cosmetic products.

8. Side effects from: Hair washing products, Hair dyes. Nail cosmetics. Products for the teeth and the oral cavity. From special products. Insect repellent products.

9. Evidence of toxicology. Absorption elements from the skin. Toxicity tests.

10. Basic Principles of Cosmetic Safety Control: Acute oral toxicity. Dermal Absorption. Skin irritation. Ocular irritation.

11. Sensitization of the skin. Chronic Toxicity, Phototoxicity (if exposed to ultraviolet light) 12. Toxicokinetics. Toxicokinetic studies. Studies in silico 13. Human Toxicity Data. Mutability. Genotoxicity. Carcinogenesis.

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning,etc.*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of ICT in teaching • Use of the e-mail and the website (e class) for communication with the students

UseofICTinteaching,laboratoryeducation, communicationwithstudents	

TEACHING METHODS *Themanner andmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	70
	Study-Essay writing	50
	Course total	120

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	LANGUAGE: GREEK EVALUATION METHODS 70% Written Assessment (Multiple Choice Test, Short Answer Questions) 30% Essay

5. ATTACHED BIBLIOGRAPHY

GREEK

1. Γ.Θ. Παπαϊωάννου, Μ.Ράλλης, «Έλεγχος καιΑξιολόγηση των Καλλυντικών προϊόντων»,Πανεπιστημιακές Σημειώσεις, Αθήνα 1996

2. Χατζή Ι.: Δερματολογία- Αφροδισιολογία, Αθήνα, 1994

3. Κουτσελίνης Α., Μουλοπούλου-Καρακίτσου Κ. : Καλλυντικά. Ταξινόμηση, Χρήση, Τοξικότητα, Ανεπιθύμητες Ενέργειες. Εκδόσεις Gutenberg, Αθήνα 1984

4. Μουλοπούλου Κ., Ρηγόπουλος Δ., Στρατηγός Ι.: Καλλυντικά Συστατικά και Εφαρμογές. Β' έκδοση

5. Παπαϊωάννου Γ.Θ. (1988) Κοσμητολογία. Συστατικά- Παρασκευή- χρήση καλλυντικών. Αθήνα

6. Χαρβάλα Α., (1994) «Αλκαλοειδή και μη Μορφοποιημένες Δρόγες» Εκδόσεις Πανεπιστημίου Αθηνών, Αθήνα.

FOREIGN

1. Aburjai T., Natsheh F.M. Plants Used in Cosmetics, Phytother. Res. 17, 987–1000. 2003.

2. Harborne, B. J. and Baxter, H., "Phytochemical Dictionary" Taylor & Francis (eds), London. 1993

3. Tisserand R., Balacs T. Essential Oils Safety, Elsevier. 2006

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΚΔ5031-5032	**SEMESTER**	5
COURSE TITLE	DERMATO- COSMETIC SCIENCE II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Theory	6 (3 Theory+3 Lab)	7
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	Specific Courses (SC)
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	**THEORY-LAB** https://eclass.uniwa.gr/main/portfolio.php https://eclass.uniwa.gr/courses/BISC277/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course Dermato-Cosmetic Science II which is an extension of the course Dermato-Cosmetic Science I is for students to understand and be able to develop and produce effective cosmetic products for personal skin care and hygiene. Emphasis is given on the development of sunscreen products intended to protect the skin from ultraviolet radiation (UV) and the possible formation of tumors and immunosuppression, on antiperspirants-deodorants, baby care products, make-up products, hair products, oral and hygiene products.

The goal of the course is for students to gain the necessary knowledge for the formulation and method of production of cosmetics for face care, body care, oral care, hair care and hygiene care with modern bioactive substances.

Learning outcomes
After the end of the course students will be able to:

- understand and explain the mechanisms of action of the sunscreen filters (physical and chemical) incorporated in the sunscreen products for the protection of skin from the ultraviolet A and B solar radiation and the possible creation of neoplasms and immunosuppression.
- be able to produce sunscreen products of different SPF and types (creams, emulsions, oils)
- know the mechanism and develop the self-tanning products
- develop after sun products.
- develop single-phase and two-phases solids and liquids intended for make-up skin care.
- know and develop solid cosmetic forms consisted of of powders and granules for make- up skin care.
- know the action of the new functional ingredients of hair care products according to the principles of hair biology.
- produce hair care products.
- know the principles of perfumery.
- understand the physicochemical properties and mechanism of action of antiperspirants and deodorants and develop such products in different cosmetic types.
- know the dispersion of gases in solids or liquids and their applications in Cosmetic science and Dermatology.
- develop advanced formulations for baby care according to European legislation.
- produce products for of oral care.
- produce products for hygiene.
- produce medical devices products for skin care.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently, team work, working in an interdisciplinary environment, working in an international environment, Search for, analysis and synthesis of data and information, with the use of the necessary technology, Production of new research ideas, Production of free, creative and inductive thinking	

3. SYLLABUS

Theoretical Part of the Course

1. Clay materials in cosmetic science and their effect on the biophysical parameters of the skin. Hydrogels- Hydrocolloid products for skin care and cleansing. Natural-synthetic colloids.

Natural and synthetic polymers in skin care.

2. Sunscreen products for protection from UVA and UVB radiation. Sun Protection Factor (SPF). Mechanism of action of organic sunscreens. Effect of excipients on the λmax of sunscreens. Effect of excipients on the efficacy of sunscreen products.
3. Ultraviolet radiation. Benefits and harmful consequences. Direct action of ultraviolet radiation on the skin and action through free radicals. Oxidative stress.
4. Inorganic (natural) sunscreens:
   a) Conventional mechanisms of action. Effect on the rheological properties of the product, interaction with the excipients. Advantages-disadvantages.
   b) Micro-fine natural filters and mechanisms of action. Interaction with excipients. Advantages disadvantages.
5. Water resistant sunscreen products. Photo protective substances. Possible transdermal

absorption of sunscreens. Concerns, Legislation and modern formulation.

6. Protocols and Efficacy studies for SPF (UVA,UVB). In-vitro, in- vivo measurement of SPF.
7. Artificial tanning products-Mechanisms of action - tanning promoters.
8. Make-up skin products: Suspension of solid dyes in single-phase and two-phase systems. Hot casting. Cosmetic product forms to cover skin imperfections-make-up (emulsion, sticks, foam-packaging under pressure).
9. Make-up Lip balm products: Lipstick sticks, indelible and overlay lipsticks, lip polishes-high viscosity lip glosses. Perfumes and dyes for mucous products intended for the mucous membranes - Restrictions.
10. Make-up Eyeshadow products (eye shadows, eye pencils, eyebrows, mascara). Pigments for make-up products intended for the eye area - Restrictions.
11. Insect repellent products. Physicochemicalproperties and efficacy of their components. Precautions-Legislation.
12. Alpha and beta hydroxy acid products (AHA, BHA). Categories α- and β-hydroxy-acids-chemical properties-Efficacy. Incorporation and formulation in cosmetic products.
13. Antiperspirants. Deodorant products. Mechanisms of action of antiperspirants and deodorants. Aluminum Derivatives-Limitations.
14. Aromatic products-Essential oils.
15. Foams-Gas dispersions in liquid or solid. Production methods of Foam. Surfactants, Polymers used for foam formation. Foam density, Foam stabilization.
16. Basic principles of hair biology. Hair coloring. Colors of plant origin. Chemical classification of synthetic dyes-coupling reagents. Risks-Limitations. Semi-permanent and permanent hair coloring compositions. Use of Computational Chemistry to develop new dyes. Hair straightening products. Hair discoloration products.
17. Products for topical application for the strengthening of scalp hair growth. Eyelash strengthening products. Hair removal products. Thioglycolic acid salts and their action on the hair keratin and keratin layer. Enzymes to remove hair growth.
18. Nail care-coloring products. Chemical classification of pigments. Physicochemical properties of plasticizers-solvents for the nail color layer. Artificial ultraviolet radiation in the nail coloring layer and nails- Possible risk.
19. Baby and children's cosmetic products. Specific features of the baby skin barrier (pH, lipids). Personal care and hygiene products for babies. Powders. Excipients, Emulsions, Creams, Suspensions, Hazard substances. Percutaneous absorption. Baby wipes for cleaning. Baby and children’s sunscreen products and restrictions.
20. Oral hygiene products. Medical devices products. Active substances for toothpastes and mouthwashes. Toothpastes: thixotropic properties, abrasive ingredients, Relative Dental Abrasion (RDA), effect of fluoride compounds on enamel, antibacterial agents-limitations. Legislation. Whitening toothpastes. Herbal toothpastes.

Laboratory part of the Course

1. Aluminum-Silicate compounds for skin cleansing. Clay cleansing paste. Production. Physicochemical Properties. Efficacy-Safety.
2. Synthetic colloids for skin cleansing. Production of colloidal mask with synthetic colloids-Physicochemical properties. Efficacy-Safety.
3. Single-phase solid oily systems in make-up lip care products: Lipstick stick Production-Molding a) indelible and b) coating.
4. Single-phase oily systems with different rheological properties in Make-up lip care products: Shaping lip glosses: a) low viscosity liquid b) high viscosity liquid and c) pomade.
5. Hot casting method for the formation of liquid make-up in the type of powder.

Incorporation of microspheres.

6. Solid cosmetic forms of powders and granules. Compaction of powder mixtures. Dry granulation: a) Formation of compressed face powder and b) Formation of compressed eye shadow.
7. Two-phase systems for make-up of eyelashes: a) Production of o/w mascara emulsion b) Production of o/w emulsion-solvent.
8. Liquid single-phase cleanser for the eye area. Formation- Stability.
9. Sunscreen face cream with SPF 30 (UVA- UVB) protection with:
   a) organic sunscreens and b) coated micro-fine inorganic sunscreen particles. Development- Physicochemical properties- Stability.
10. "Water resistant" Sunscreen body emulsion with the use of water repellents. Development-Physicochemical properties. Stability.
11. Skin care products: development of cream with incorporation of α-hydroxy acids 5% and 10% w/w. Physicochemical properties-Stability.
12. Scalp cleansers: a) Anti-dandruff shampoo- Development-Stability b) Sebum-regulating shampoo c) Shampoo for dryness d) Shampoo for normal hair.

Formulation- Physicochemical properties- Stability.

13. Hair care products for styling and conditioning: Formulation:
    a) Conditioner (low viscosity emulsion) with cationic surfactants. b) Mask (high viscosity emulsion) with a mixture of surfactants and nourishing agents.

    c) Fixative gel with synthetic polymer.
14. Deodorant and antiperspirant products: Production of different cosmetic types

    a) emulsion of suitable viscosity for roll-on packaging. b) Deodorant sticks.
15. Development of aromatic products.

    a) Eau De Toilette-Cologne b) After shaving products (lotion)

1. **TEACHING and LEARNING METHODS-EVALUATION**

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of the learning process through e-class for the theoretical and laboratory part, videos of lectures pf the course under the auspices of the Institution, Exercises through e-class.
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements, clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** — ***Semester workload*** Lecture — 80 Group independent laboratory work-presentation and processing of experimental results — 50 Independent study — 70 Educational visit — 10 Course total — *210*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	**FINAL WRITTEN EXAMINATION** *Theoretical Part* *Written exams:* Multiple choice questionnaires, open-ended questions, characterization of sentences as true or false, problem solving, complete of answers. (100%) *Laboratory Part* *Written exams in the laboratory exercise of the day. (50%)* *Written exams: Multiple choice questionnaires, open-ended questions, characterization of sentences as true or false, problem solving, complete of answers. (50%)*

2. **ATTACHED** BIBLIOGRAPHY

- Suggested bibliography:

1. Τσιρίβας Ε, Βαρβαρέσου Α. Σημειώσεις «Δερματοκοσμητολογίας ΙΙ», Τμήμα Βιοϊατρικών Επιστημών, Πανεπιστήμιο Δυτικής Αττικής, 2019.
2. Τσιρίβας Ε., Βαρβαρέσου Α. Παπαγεωργίου Σ. «Εφαρμοσμένη Κοσμητολογία-Δερμοκαλλυντικά», ISBN:978-960-583-151-6.ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2016.
3. Τσιρίβας Ε., Βαρβαρέσου Α. Εργαστηριακές Ασκήσεις «Δερματοκοσμητολογίας ΙΙ», Τμήμα Βιοϊατρικών Επιστημών, Πανεπιστήμιο Δυτικής Αττικής, 2019.
4. Sunscreens: Regulations and Commercial Development, 3rd Edition,Nadim Shaath, ISBN-13: 978-0824757946
5. Harry's Cosmeticology 9th Edition.Meyer R. Rosen.
6. Barone S. J., Cohen I. D. and Sclossman M. L., J Cosm Sci, Monograph no 8, Lipstick Technology.
7. Lim H. W. and Draelos Z.D. Clinical Guide to Sunscreens and Photoprotection ISBN-13: 978-1420080841, Informa, 2008.
8. Schlossman M. L. The Chemistry and Manufacture of Cosmetics. Vol 1 Basic Science ISBN-13: 978-1932633474 4th edition, USA, 2008

9. Shaath N. A. The Encyclopedia of Ultraviolet filters. ISBN-13: 978-1932633252, Allured Publishing Co., 2007.
10. http://ec.europa.eu/consumers/cosmetics/cosing/

9.4.3 6th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETICS AND COSMETIC SCIENCE		
STUDY LEVEL	UNDERGRADUATE		
COURSE CODE	**6021-6022**	**SEMENSTER**	**6th**
TITLE OF COURSE	**ELECTRICAL DERMATOTHERAPY I**		

INDEPENDENT TEACHING ACTIVITIES	**TEACHING HOURS WEEKLY**	**ECTS**
Theory and Laboratory	6 (3T +L)	7

COURSE TYPE **general background,** **special background, specialization** **general knowledge, skills development**	SC
PREREQUISITE COURSES:	
LANGUAGE OF TEACHING and EXAMS:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
WEBSITE (URL)	

2. COURSE OUTCOMES

Course results

The aim of the course is to teach students:

1. The types and categories of the electrotherapeutic modalities.
2. The electrophysiology of electrotherapeutic modalities and their effect on tissues (skin, adipose, muscle).
3. The indications and contraindications of each electrotherapy device.
4. Their application in Aesthetics for the restoration of aesthetic problems

After the end of the course students will be able to:

1. use effectively and safely the Electrotherapeutic methods used in Aesthetics.
2. choose the appropriate electrotherapy methods depending on each case.
3. properly combine the above methods, creating recovery schemes on a case-by-case basis, according to the indications and contraindications of eachelectrotherapy device.
4. make protocols for application of electrotherapy such as pulsed, alternating current.
5. make protocols for the application of low frequency currents (microwaves, electrolifting, electrolipolysis. medium frequency alternating currents (MFACs)).
6. make protocols for the application of TENS currents Diadynamic current (DD) and transcutaneous electrical nerve stimulation (TENS).
7. make protocols for the application of therapeutic Ultrasound, Magnetic - Electromagnetic fields and Thermotherapy, Diathermy.
8. create protocols for the application of Pressotherapy.
9. create protocols for the application of Photoanaplasis IPL .
10. create protocols for the application of Cryotherapy.
11. create protocols for the application of Radiofrequency.
12. create protocols for the application of Cavitation and Needling Cavitation ad Microneedling.
13. create protocols for the application of Electrothermal therapy.
14. create protocols for the application of Oxygen therapy.

General Competences

Individual work,

Teamwork,

Work in an interdisciplinary environment,

Work in an international environment.

3. SYLLABUS

Theory

1. Indications for application. Contraindications - Precautions. Clinical applications of prevention and rehabilitation. Rehabilitation schemes Incident assessment. Treatment protocols. Follow up all the following aesthetic electrotherapy methods
2. Galvanic, Alternating Currents Modified Alternating Currents. Low frequency Currents Aesthetic Applications of Low and Medium Frequency Currents.
3. TENS Currents, Dynamic Currents

4. Magnetic - Electromagnetic fields
5. Ultrasound, Thermotherapy, Cryotherapy , Photoanaplasis,
6. Pressotherapy, Cavitation and Needling cavitation
7. Radiofrequency
8. Oxygen therapy, Microneedling
9. Mesotherapy
10. Modern Electrotherapeutic Applications

Laboratory Courses

Aesthetic treatments. Clinical applications exercise .Methods of clinical applications on face and body. Diagnose. Treatment protocols. Follow up below aesthetic electrotherapy treatments.

1. Galvanic and High frequency, low current high frequency alternating
2. Transcutaneous Electrical Nerve Stimulation (TENS), microcurrent therapy, and electrical muscle stimulation (EMS)
3. Low Frequency Currents Aesthetic Applications of Low and Medium Frequency Currents
4. Dynamic Currents
5. Magnetic - Electromagnetic fields
6. Ultrasound, Thermotherapy, Cryotherapy , Photoanaplasis,
7. Pressotherapy, Cavitation and Needling cavitation
8. Radiofrequency
9. Oxygen therapy, Microneedling
10. Mesotherapy
11. Modern Electrotherapeutic Applications

4. TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHODS	In class	
INFORMATION COMMUNICATION TECHNOLOGIES (ICT) USAGE	• Usage of ICT in teaching • Usage of e-mail and website of the Department for informing the students. • Usage of e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.	
TEACHING ARRANGEMENT	***Activity***	***Students Duties***

	Lectures	
	Team Project	
	Individual Study	
	Visits to places that apply advanced technology system	
	Total of teaching periods	**210**
STUDENT EVALUATION	LANGUAGE: GREEK EVALUATION METHODS: THEORY: 50% Written Assessment (Multiple Choice Test, Short Answer Questions) 50% Public Presentation of Assignment LABORATORY: 100% Written examination	

5. RECOMMENDED-BIBLIOGRAPHY

Greek

1. Riga M. - Gligori S., Aesthetic Electrotherapy, published by Ath. Stamouli, 2006.
2. Electrotherapy T Watson 2011 Elsevier ISBN : 978-960-489-034-7

Foreign

1. Electrotherapy : Evidence Based Practice T Watson2008 (March) Elsevier ISBN 13: 978-0-443-10179-3.
2. Electroterapia Practica Basada en la Evidencia T Watson 2009 Elsevier ISBN: 978-84-8086-444
3. Electrotherapy Explained : Principles and Practice V Robertson, A Ward, J Low and A Reed2006 Elsevier ISBN-13: 978-0-7506-8843-7
4. Modalities for Therapeutic Intervention Michlovitz, S. Bellew, J. and Nolan, T.2012 F. A. Davis ISBN 978-0-8036-2391-0
5. Therapeutic Electrophysical Agents: Evidence Behind Practice .Alain Belanger .2014 Lippincott Williams & Wilkins. ISBN: 978-1-4511-8274-3
6. Physical Agents in Rehabilitation : From Research to Practice. Michelle Cameron 2009 (3rd Edition) Saunders/Elsevier ISBN : 1-4160-3257-1
7. Practical Electrotherapy : A Guide to safe Application. Fox and T. Sharp 2007 Elsevier ISBN-13: 978-0-443-06855-3
8. Clinical Electrotherapy. Roger Nelson, Dean Currier, Karen Hayes1999 Prentice Hall ISBN : 083851491X
9. Clinical Electrotherapy : Your Guide to Optimal Treatment.Jan Bjordal .2001.Prima Books ISBN 82-7634-320-1
10. Canine Rehabilitation and Physical Therapy (2nd Edition) Millis and Levine2014 Elsevier/Saunders ISBN 978-1-4377-0309-2 Levine and Watson chapter (Ch 19) on

Ultrasound
11. Handbook of Photomedicine.MR Hamblin and YY Huang 2014 CRC Press .ISBN 13-978-1-4398-8469-0
12. Electrical Stimulation, Ultrasound and Laser Light Handbook .Michelle Cameron 2006 Elsevier/Saunders ISBN 1416032495
13. An Easy Guide to TENS pain relief G. Gadsby .2000 ISBN-10: 0954080602
14. King's Guide to TENS for Health Professionals. Alan King 1999 (1st Edition) ISBN 0-9535623-2-8
15. Disorders of Fat and Cellulite: Advances in Diagnosis and Treatment (Series in Cosmetic and Laser Therapy) 2011 David J. Goldberg Alexander L. Berlin ISBN-13: 978-0415477000 Edition: 1st Informal Health care
16. Cellulite: Pathophysiology and Treatment (Basic and Clinical Dermatology) 2010 Mitchel P. Goldman Doris Hexsel ISBN-13: 978-1439802717 Edition: 2nd Informa Health care
17. Injection Treatments in Cosmetic Surgery (Series in Cosmetic and Laser Therapy) Hardcover, 2008 Benjamin Ascher, Marina Landau , Bernard Rossi ISBN-13: 978-0415386517 Edition: 1st
18. Body Rejuvenation Hardcover, 2010 Murad Alam (Editor), Marisa Pongprutthipan ISBN-13: 978-1441910929 1st Edition Springer

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6042	**SEMESTER**	6th
COURSE TITLE	BASIC PRINCIPLES OF AESTHETIC DERMATOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course,give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	CESBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6,7 & 8 of the European Qualifications Frame work for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of this course for the students is, to learn and understand the most common applied aesthetic treatments in worldwide distribution, which improve the human body. The way of action of treatments, the modern technology which is used, the results that can be achieved and the numerous side effects that are likely to occur are also pointed out through photographs.
In addition, students will be able to take the initiative to comment on side effects of popular and practical clinical issues such as tattooing and piercing.

General Competences

Taking in to consideration the general competences that the degree-holder must acquire (as this appear in the Diploma Supplement and appear below) at which of the following does the course aim?
Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations Decision-making
Working independently Teamwork
Working in an international environment Working in an interdisciplinary environment Production of new research ideas
Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others…

Working independently
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Showing social, professional and ethical responsibility and sensitivity to gender issues

3. SYLLABUS

1. Melasma (Etiology, epidemiology)
2. Melasma (Clinical picture, treatment)
3. Botulinum toxin
4. Side effects of botulinum toxin treatment
5. Facial implants
6. Side effects of treatment with facial implants
7. Peelings
8. Side effects of peelings
9. Laser hair removal
10. Side effects of Laser hair removal
11. Side effects of Laser devices other than hair removal
12. Mesotherapy
13. Side effects of mesotherapy
14. Face lift with threads
15. Side effects of lift with threads
16. Side effects of tattoos

17. Side effects of body piercing
18. Cryolipolysis
19. Cosmetic procedures in pregnancy

4. TEACHING and LEARNING METHODS-EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td colspan="2">Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, Communication with students</td><td colspan="2">Use of ICT in teaching,
Communication with students by e mail and the web site of Biomedical Sciences Department.
Use of e-class for slides' posting,
scientific articles, useful links, questions;
answers, exercises, etc.</td></tr>
<tr><td rowspan="6">TEACHING METHODS
The manner and methods of teaching aredescribed in detail.
Lectures,seminars,laboratory practice,fieldwork,studyandanalysisof bibliography,tutorials,placements, clinicalpractice,artworkshop,interactiv eteaching,educationalvisits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>Activity</td><td>Semester workload</td></tr>
<tr><td>Lectures- interactive teaching</td><td>120</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,public presentation,laboratorywork,clinicalexaminationofpatient,artinterpretation, other
Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td colspan="2">• Multiple-choice questionnaires
• True or False questions</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

1. Baumann LS. Cosmetic Dermatology: Principles and Practice. 2nd ed. McGraw Hill Publ, 2009.

2. Draelos Z. Cosmetic Dermatology: Products and Procedures. 2nd ed. Wiley Blackwell Publ, 2016.

3. Tekchandani S. Study of Clinical Cosmetology-1. A Hands-on Guide. Jaypee Brothers Medical Publ. 2015.

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6051	**SEMESTER**	6
COURSE TITLE	BIOTECHNOLOGY IN COSMETIC SCIENCE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/AISTH162/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to acquaint students with the applications of Biotechnology in Cosmetology and dermatological products and also the processes of production and recovery of biotechnological products.

The objective of the course is to provide information on the development and application of advanced technologies and the exploitation of renewable sources for the acquisition and study of bioactive compounds and raw materials that are necessary for various product categories in the modern cosmetics industry.

Learning outcomes

After the end of the course students will be able to:

- Know the basic principles of Biotechnology,

- Learn the substrates of biotechnology and renewable sources for the production of cosmetic ingredients
- Understand the production and recovery processes of raw materials and bioactive ingredients used in cosmetology and dermal products.
- Identify the advantages and possible disadvantages of obtaining bioactive substances and raw materials by biotechnological methods.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently, Teamwork, Working in an interdisciplinary environment, Working in an international environment, Production of free, creative and inductive thinking, Production of new research ideas, Development of environmental consciousness

3. SYLLABUS

1. Introduction to Biotechnology.
2. Biotechnology of microorganisms (methods of controlling the growth of microorganisms - bioreactors and culture systems).
3. Biotechnology Substrates (nutrient substrates for the growth of cell cultures, biomass, substrates as carbon sources, nitrogen sources, chemical-petrochemical as substrates, products in Biotechnology).
4. Industrial fermentations, kinetic parameters of the growth of microorganisms, fermenters, sterilization, fermentation process, recovery of biotechnological products.
5. Plant cell cultures, enzyme reactions, biocatalytic processes and other advanced technologies for the development of (new) active compounds and raw materials.
6. Algae cultures.
7. Stem cell technology in cosmetic products.
8. Contribution of biotechnology to the improvement of the processes of preparation of cosmetic products and development of innovative cosmetic products.
9. Applications of biotechnology in cosmetology (amino acids, peptides, proteins, enzymes, vitamins).
10. Applications of biotechnology in cosmetology (alcohols, glycosides, phenolic acids, secondary metabolites, etc.).
11. Development and evaluation of systems for providing safety / stability of modern biotechnological cosmetic products
12. Regulatory requirements in the field of biotechnological cosmetics raw materials with emphasis on their quality and safety.
13. Biotechnology and bioethics, effects of biotechnology.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to- face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, Communicationwithstudents*	Use of ICT in teaching, Support of learning process through e-class Exercises through e-class, communication with students	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	90
	Independent study	30
	Course total	*120*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Greek language, Final written examination (100%): Multiple choice questionnaires, short-answer questions, true or false questions Criteria are given	

5. **ATTACHED** BIBLIOGRAPHY

- Suggested bibliography:

1.Kyriakidis D., Biotechnology ISBN: 9604315951, ZHTH, Thessaloniki, (2000).
2.Lad R., Biotechnology in Personal Care, ISBN-13: 9780824725341, Taylor and Francis Group, New York, (2006).
3.Khan, F. A., *Biotechnology in Medical Sciences,* ISBN-13: 9781482223675, Taylor and Francis Group, New York, (2014).
4.Doelle H. H., Roken S. and Berovic M., *Biotechnology Fundamentals in Biotechnology Volume XIV,* ISBN: 9781848262683, EOLSS Publishers/ UNESCO, Oxford, United Kingdom (2009).
5.Marian P., *Advances in Applied Biotechnology*, ISBN: 9789533078205, In Tech, Croatia, (2012).
6.Sambamurthy K. and Kar A., *Pharmaceutical Biotechnology*, ISBN: 9788122424249 New Age International, New Delhi (2016).
7.Farris P.K., *Cosmeceuticals and Cosmetic Practice*, ISBN: 978-1-118-38482-4, John Wiley & Sons, Ltd, UK, (2014).

1. GENERAL

SCHOOL	OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**6011-6012**	**SEMESTER**	6
COURSE TITLE	EFFICACY OF COSMETIC PRODUCTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures and laboratory exercises	6 (3 lectures+3laboratory exercises)	7
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SC
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE(URL)	https://ocp.teiath.gr/courses/AISTH_UNDE104/ https://ocp.teiath.gr/courses/AISTH_UNDE105/ https://eclass.teiath.gr/courses/AISTH104/ https://eclass.teiath.gr/courses/AISTH117/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to teach students the physicochemical methods used to evaluate the effectiveness of cosmetic products and their correlation with the proof of the claims made on cosmetic products.

The aim of the course is to acquaint students with the main biophysical methods used to evaluate the effectiveness of cosmetic products and to enable them to prepare protocols, conduct and evaluate effectiveness studies – claim substantiation according to international clinical practice and international guidelines.

Learning Outcomes:
After the end of the course students will be able to:

- know the basic principles of designing and conducting cosmetic efficacy studies in

volunteers in accordance with the international clinical practice (GCP).

- know the basic principles of the methods (sensory and biophysical) used for the evaluation of the effectiveness of cosmetic products with emphasis on the evaluation studies of the skin protection from ultraviolet radiation and the intra / transdermal absorption studies.
- know the physicochemical methods for quantification of the biophysical parameters of the skin such as elasticity, hydration of stratum corneum, etc.
- Evaluate the results of effectiveness studies
- Compare the effectiveness of products that "carry" the same claim of action.
- Compare effectiveness evaluation methods for the same action
- Design, organize and conduct studies on the effectiveness of cosmetic products with sensory and biophysical methods, in vivo, in vitro and ex vivo in accordance with international good practice.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently, Team work, , Working in an interdisciplinary environment, Working in an international environment, Decision making during laboratory practice, Respect for the natural environment, Production of creative and inductive thinking	

3. SYLLABUS

Theory

1. Effectiveness study assays-Study design and organization. Efficacy study writing. Proof of claims. Legislation to substantiate claims in the European Union. Sensorial and biophysical studies. In vivo, in vitro and ex vivo efficacy studies.
2. Analysis of skin surface topography-Analysis of lines, pores, texture. (Optical and Laser Profilometry). Applications and comparison of imaging methods with each other. Evaluation of cell-promoting substances and anti-aging cosmetics.
3. Determination of stratum corneum hydration-Efficiency of moisturizing products. Electrical methods, Absorption of infrared radiation.
4. Determination of transdermal water loss- Evaluation of moisturizing products but also of products that damage the lipid-epidermal barrier. Open and closed chamber method.
5. Physicochemical principles of the sebum determination method of the skin and scalp - Evaluation of sebum regulating products.
6. In vivo methods for the determination of skin melanin. Spectrophotometry in the determination of melanin. Evaluation of whitening cosmetics and dermatological products for vitiligo. In vitro methods for the evaluation of skin whiteners. Biophysical methods for evaluating erythema and effectiveness of anti-inflammatory cosmetics.
7. Skin pH quantification. Effect of cosmetic cleansers on skin pH. Evaluation of cleaning products. Model SPM (Sebum-pollution model, SPM).
8. Physicochemical principles of the method for determining skin elasticity. Evaluation of topical healing products and anti-aging treatments.
9. Use of ultrasound in the evaluation of products to increase skin collagen (anti-aging and healing) and skin hydration. Use of ultrasound to evaluate nail strengthening products.
10. Evaluation of exfoliating products. Dansyl chloride method- keratinocyte collection strips - UV lamp.
11. Electron permeability (TEM) and scanning (SEM) electron microscopy, spectroscopic and mechanical methods for evaluating the effectiveness of hair cosmetics. Differential scan calorimetry for hair repair products. Angular photometry for the evaluation of brightness and color.
12. In vivo evaluation of the effectiveness of a sunscreen product for ultraviolet B radiation: Method of measurement using a solar simulator of the Sun Protection Factor, SPF. In vitro methods
13. Evaluation of the effectiveness of a sunscreen product for ultraviolet A radiation (UVA protection factor). In vivo and in vitro methods. Critical wavelength method.
14. Evaluation of effectiveness of antiperspirants and deodorants. High performance liquid chromatography and gas chromatography applications in combination with mass spectroscopy.
15. In vitro and in vivo methods for the evaluation of transdermal absorption of the ingredients contained in cosmetic and topical products. Structure-action relations. Effect of lipophilicity. In silico models of the effect of lipophilicity on percutaneous absorption. Methods for the determination of lipophilicity of bioactive ingredients and excipients.
16. Skin equivalents and application in the evaluation of the effectiveness of cosmetics and dermal products.

Laboratory exercises

1. Measurement of transdermal water loss by the closed chamber method after the use of degreasing agent. Diagram construction-interpretation.
2. Measurement of transdermal water loss by the closed chamber method after the use

of a factor that strengthens the lipid-epidermal barrier. Diagram construction-interpretation.

3. Determination of skin color (Pigment darkening-Evaluation of whitening products after two months of application).
4. Determination of skin hydration after a certain time of application of O / W and W / O cosmetic cream. (Evaluation of moisturizing products). Diagram construction-interpretation-comparison.
5. Measurement of skin sebum with a sebumeter (Evaluation of sebum regulating products). Skin sebum measurement using sebum collection strips. Recording and evaluation of results.
6. Scalp sebum measurement with a sebumeter (Evaluation of sebum regulating shampoos).
7. Identification and imaging of skin exfoliation (Evaluation of moisturizing products). Measurement and imaging of scalp exfoliation (Evaluation of anti-dandruff products). Use of keratinocyte collection films - UVA photography.
8. Skin pH measurement. Effect of cleansing soap and liquid cleanser on skin pH. Measurement of pH at regular intervals after application. Diagram construction. Comparison.
9. Determination of skin elasticity. Evaluation of anti-aging products. Evaluation of healing products.
10. Measurement and imaging of skin microtopography with the method of optical permeability profilometry. 3D copy making. (Evaluation of anti-wrinkle products).
11. Measurement and imaging of skin microtopography with the method of UVA scanning (Evaluation of anti-wrinkle products).
12. Measurement of the Sun Protection Factor (SPF) and critical wavelength in vitro with ultraviolet spectrophotometer (Evaluation of sunscreen products).
13. Determination of lipophilicity of a mixture of preservatives (parabens) with high performance liquid chromatography. In silico prediction of percutaneous absorption.
14. Determination of lipophilicity of a mixture of preservatives (parabens) by the shake flask method in an octanol-water system. In silico prediction of percutaneous absorption.
15. Determination of percutaneous absorption by Franz cells and high performance liquid chromatography. Use of skin equivalents.

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	*Use of ICT teaching, e-class exercises, laboratory education, communication with students*

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	***Semester workload***
Lectures	120
Team , independently laboratory practice-presentation and processing of experimental results	90
Course total	120

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

THEORETICAL PART
Greek language
Final written examination: multiple choice questionnaires, short-answer questions, True or False questions, problem solving (100%)
Or
Final written examination: A) multiple choice questionnaires, short-answer questions, True or False questions, problem solving (70%) and
B) public presentation of team work (30%)
Criteria are given
LABORATORY PART
Greek language
1. Written work, essay/report per laboratory exercise (30%)
2. Written examination in the laboratory exercise of the day (35%)
3. Final written examination: Multiple choice questionnaires, short-answer questions, True or False questions, problem solving (35%)

Criteria are given

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Varvaresou A., Specific Cosmetic Sience, ISBN 9786188397309 Vasiliadis SA, 2018.
2. Schrader K. and Domsch A. Cosmetology-Theory and Practice. Verlag fűr chemische Industrie. H. Ziolkowsky GmbH, Augsburg, 2005.
3. Elsner P and Merch H.F.Cosmetics: Controlled Efficacy Studies and Regulation ISBN-13:

978-3642641602, Springer, 2013.
4. Fluhr J.W. Practical Aspects of Cosmetic Testing: How to Set up a Scientific Study in Skin Physiology, Springer, 2011.
5. Aust L. Cosmetic claims substantiationISBN-13: 978-0824798550, Taylor and Francis, 1998.

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	Aesthetics and Cosmetic Science		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6041	**SEMESTER**	6
COURSE TITLE	ENVIRONMENT & COSMETICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	4
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESBC
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/modules/auth/courses.php?fc=206

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim and purpose of the course is to teach students the variety of environmental factors that affect a person during the life cycle. These factors are related to the interventions and changes that human activity has caused to the environment, so students will be taught the way of avoiding the created adverse effects on humans.

At the end of the course students will be able to
- know the impact of the environment on humans
- prevent the harmful effects
- know the ways of protection from the environmental harmful conditions

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Teamwork Working in an international environment Work in an interdisciplinary environment	

3. SYLLABUS

1. Environment and cosmetics. Endocrine disorder.

2. Nomenclature and properties of polymers in cosmetics.

3. Origin of microplastics in the environment.

4. Macroplastics-cosmetics packaging and environment.

5. Cosmetic raw materials from food waste.

6. Air pollution and skin. Metals in the environment. Skin lesions from natural causes.

7. Free radicals. Sun and skin.

8. Smoke and skin. Detergents. Occupational skin ulcers.

9. Types of environmental pollution. Ultraviolet pollution / noise pollution / air pollution and health.

10. Pesticides/Dioxins/Genetically modified food and health.

11. Weather and climate. Historical background of climate change. Impact of climate change on health. Effects of natural phenomena on health. (heat waves, floods, snowfalls and severe cold, forest fires, hurricanes, droughts, earthquakes, volcanoes).

12. Extreme weather events. Climate change and migration.

13. Treatment by the Aesthetic Cosmetologist.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, e- class	
TEACHING METHODS *The mannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	70
	Study and analysis of bibliography	50
	Course total	*120*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Language: Greek Methods of evaluation:100 % multiple choice questionnaires, short-answer questions criteria are given	

5. **ATTACHED** BIBLIOGRAPHY

- Suggested bibliography:

1. Alachiotis S., Introduction to genetics, Greek Letters, 2005.
2. Chaniotis F., Internal Medicine, Litsas Medical Publications, 1997.
3. Protopapa E., Skin Exposure Roads, Notes on the Postgraduate Program "Environment and Health" in partnership with the Medical School of Athens.
4. Katsougianni K. Air Pollution and Health. National Research Foundation, Scientific Training Lectures "Environment and Health".
5. Donna AA Arvanitogiannis I.S. "Genetically modified foods and their effects on health". Archives of Greek Medicine 2009,26 (6): 727-740
6. 6, Karvounis S., Georgakellos D. Environmental management. Stamouli Publications, Athens 2003
7. Dimitriadis EA Toxic heavy metals and their specific effect on various types of dementia. (on line: http://www.encephalos.gr)
8. Isaris. Dioxins what we need to know
9. Explosion of migration wave due to climate change (on line: http://www.solon.gr)

10. Karageorgiou: Noise pollution (http://www.library.tee.gr)
11. Hatzis: Noise pollution (http://www.library.tee.gr)
12. Pavlou: Post-traumatic stress disorder
13. Sygkollitou Efthymia, Environmental psychology Contemporary trends in Greece, Kyriakidis Publications.
14. C. Brooks and N. Marshall, Basic Endocrinology, Parisianos 2004.
15. Links between pesticides and mental health (on line: http://www.healthandenvironment.org)

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΚΔ6052	**SEMESTER**	6
COURSE TITLE	MANUFACTURING OF COSMETIC PRODUCTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,,laboratory exercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Theory	3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	Specific Background Courses (SBC)
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/main/portfolio.php https://eclass.uniwa.gr/courses/AISTH145/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the basic principles of Good Manufacturing Practice «GMP» for the manufacturing of cosmetic products in industry.

The goal of the course is to teach students the basic rules of cosmetics production on an industrial scale according to the requirements of the National Organization for Medicines (EOF) and the EU, and to ensure that consumers will get a legitimate quality product.

Learning outcomes

After the end of the course students will be able to know:

- The basic principles for the correct Production Process in the Industry (Cosmetic Plants).
- The requirements of the Auditing Authorities and the Quality Assurance Management System (QA) for the quality control and assessment of the manufactured cosmetic products.
- The proper compliance and observation of the necessary legal procedures and the documentation of the Good Manufacturing Practice «GMP» in the Cosmetic Plants for the audits, by National Organization for Medicines (EOF), other companies and international organizations (ISO).
- The necessary criteria and obligations to support the position in the industry, as a Responsible Cosmetic Scientist in Manufacturing & Quality Control/Assurance of cosmetics and medical devices products for the National Authorities (EOF).

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently, team work, working in an interdisciplinary environment, working in an international environment, Search for, analysis and synthesis of data and information, with the use of the necessary technology, Production of new research ideas, Production of free, creative and inductive thinking	

3. SYLLABUS

1. *Manufacturing obligations of Industry according to European Regulation for Cosmetics (EC) 1223/2009 and National Organization for Medicines (EOF).*
2. Basic principles and criteria of International Organization for Standardization (ISO) 9001:2015, 22716:2008, for Manufacturing, Research, Quality control, Quality Assurance of cosmetics.
3. General Principles of Good Manufacturing Practice «GMP». Procedures, Standard Operating Procedures (SOP). Instructions. Standards. Protocols. Methods. Archives.
4. Personnel. Facilities. Requirements and specifications of the Hellenic & European Pharmacopoeia for air (overpressures, under pressures, classification of levels A,B,C,D,E), water (deionized, purified, air conditioning (temperature, humidity, air exchange)
5. Raw materials. (receipt-control-release). Recording and traceability methods. Analytical identification methods. Certificates of analysis. Release systems to Production.
6. Packaging Materials. (receipt-control-release). Sample standardization and quality control methods.
7. Hygiene. Basic rules of hygiene. Appropriate clothing in the production-packaging

areas. Rules for observing personal and group cleaning. Rules for avoiding microbiological (visible and invisible) contamination.

8. Equipment. Necessary technical characteristics of production vessels and packaging machines. (mixers-homogenizers, filling-packing machines for vials, jars, labels, carton tubing filling machines, etc.).
9. Final Products. Production-Filling-Final Packaging Methods. Control-Release of final products. Traceability methods of Batch No of products.
10. Methods of recording and keeping records of production process and corresponding certificates of analysis.
11. Storage-Distribution. Rules of good storage-distribution practice. Adherence to the «First in First out» import system (FIFO) of raw materials, packaging materials, semi-finished and finished products. Planning System (ERP), Supply Chain of materials. Evaluation of Suppliers.
12. Management of Non-Compliant Products. Complaints. Withdrawals. Self-inspections. Corrective actions. Change control.
13. Statistical Review of the production process and the quality assurance system of the Cosmetics Production (waste, procedures, complaints, services, controls, returns, etc.)
14. Environmental Quality System. Regulation, Specifications, Limits according to EU Regulation of cosmetics for Good Manufacturing Practice «GMP».

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of the learning process through e-class for the theoretical and laboratory part, videos of lectures pf the course ynder the auspices of the Institution, Exercises through e-class.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *The student's studyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lecture	80
	Educational visit	10
	Independent study	30
	Course total	*120*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	FINAL WRITTEN EXAMINATION (100%): Multiple choice questionnaires, open-ended questions, characterization of sentences as true or false, problem solving, complete of answers.

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography :

1. Σ.Παπαγεωργίου. Σημειώσεις «Παραγωγή Καλλυντικών», Τμήμα Βιοϊατρικών Επιστημών, Πανεπιστήμιο Δυτικής Αττικής, 2019.
2. Τσιρίβας Ε., Βαρβαρέσου Α. Παπαγεωργίου Σ. «Βασικές Αρχές Κοσμητολογίας», ISBN: 978-960-394-920-6 ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2012.
3. EN ISO 22716:2007 Cosmetics - Good Manufacturing Practices (GMP) Guidelines on Good Manufacturing Practices (ISO 22716:2007)/ C 123/3-21.4.2011
4. Hyman, D. Mixing and Agitation. *Advances in Cosmetic Engineering. Academic Press, London and New York (1962)*
5. Good Manufacturing Practice (GMP) Guidelines: The Rules governing Medicinal Products in The European Union, EudraLex Volume 4 Concise Reference December 8, 2009 by Mindy J. Allport-Settle
6. Guidelines for Good Manufacturing Practice of Cosmetic Products (Gmpc) (French). *Good Manufacturing Practices for Pharmaceuticals, Sixth edition, Joseph D. Nally.*
7. Good Laboratory Practice Regulations, Fourth Edition, Anne Sandy http://ec.europa.eu/consumers/cosmetics/cosing/

- Related academic journals:

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE STUDIES		
COURSE CODE	6031-6032	**SEMESTER**	6th
COURSE TITLE	Quality Control of Cosmetic Products		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Teaching & Laboratory	6 (3 T +3 L)	7
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	Compulsory / Qualification
PREREQUISITE COURSES:	Cosmetic Science I
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	http://www.teiath.gr/userfiles/vgardiki/perigrammataneo.pdf https://eclass.teiath.gr/modules/auth/opencourses.php?fc=96, https://eclass.teiath.gr/courses/AISTH142/

2. LEARNING OUTCOMES

goutcomes

The aim of the course is to teach the basic methods of quality control - analysis of cosmetics and topical products on the skin, their active ingredients, commonly used excipients of possible impurities and substances banned for cosmetic products.

Target of the course is for students to understand the increased demands on quality control and production assurance of cosmetics and topical application products on the skin in accordance with the guidelines of International Organizations, the National Medicines Agency and the European Union.

Learning Outcomes: After the end of the course students will be able to know:

The increased requirements in the level of quality control and quality assurance of cosmetics in the European area

The basic preparation methods required for the separation and quantification of the active ingredients and excipients of cosmetic products in various cosmetic forms

The physicochemical analytical methods of identification of raw materials

The analytical methods (mainly instrumental analysis) for the quantitative determination and identification of ingredients, excipients, impurities

The identification methods of the chemical structure

The methods of microbiological control of raw materials, containers, semi-finished and finished cosmetic products and medicinal products of local application on the skin as recommended by the Pharmacopoeia.

To investigate and solve stability problems of raw materials and finished products

To develop and validate methods of instrumental analysis

General Competences

Autonomous work, Group work, work in an interdisciplinary environment, work in an international environment, Production of new research ideas, Demonstration of social, professional and moral responsibility. Respect for the natural environment, promotion of free, creative and inductive thinking.

3. SYLLABUS

Theoretical Part of the Course

1. Physicochemical methods for the identification and existence of impurities of raw materials. Refractive index, Density, Melting point, etc.
2. Classification of analytical methods based on: a) the analysis applications and b) the measured property of the sample. Classical and instrumental methods of analysis. Errors of Analytical methods and devices. Characteristics of analytical methods Accuracy, Sensitivity, etc. Validation of analytical method.
3. Preparation of samples of cosmetic products and topical products for analysis: Emulsified products, Shampoos, Lipsticks. Liquid-liquid extraction and solid phase extraction.
4. Ultraviolet-visible spectrophotometry, Differential spectrophotometry, Applications in cosmetics-Paints-Sunscreens, Tanning products with dihydroxy-acetone, Bleaching cosmetics.
5. Infrared (IR) spectroscopy, Fourier Transform (FT-IR), Application to topical skin products.
6. Atomic spectrophotometry, Emission spectrophotometry, Atomic absorption spectrophotometry, Ignition spectrophotometry, Atomic absorption spectrophotometry-Applications in cosmetics-Determination of lead in lipstick and lipstick. Atomic emission flame spectrophotometry.
7. Principles of mass spectroscopy-Applications for the identification of cosmetic raw materials and the determination of impurities.
8. Chromatography. Classification according to the physicochemical phenomenon and the static phase. Paper Chromatography-Development Techniques-Appearance Methods, Applications in cosmetic products e.g. Essences
9. Thin layer chromatography-Development-Appearance-Comparison with paper chromatography
10. High Performance Liquid Chromatography, Columns, Detector Types-Comparison. Applications in the separation of active ingredients and excipients e.g. preservatives. Electrochemical detection of antioxidants used in cosmetics.
11. Combination of Liquid chromatography with mass spectroscopy. Identification.
12. Gas chromatography and application to flavorings. Gas chromatography and in combination with mass spectroscopy-Detection and identification of prohibited substances in oxidative dyes.
13. Basic principles of nuclear magnetic resonance-Structure identification.
14. Microbiological control of raw materials and containers. Microbiological control of semi-finished and finished cosmetic products according to the European Pharmacopoeia

Laboratory part of the lesson

1. Determination of refractive index in a final product - finding a relative ratio of oil

contents in massage products and raw material (Comparison - identification)

2. Determination of density in a final product. Finding a relative ratio in water / alcohol mixtures (water-alcoholic lotion).
3. Quality control of final product: Emulsion stability test (centrifugation, microscope observation), emulsion type control, viscosity control, microscopic control (dispersion, stability, micelle size control)
4. Identification of sunscreen by UV spectroscopy-Quantification of sunscreen-Calibration curve. Identification of sunscreen and determination of specific absorption
5. Emulsion formulation: a) with organic sunscreen and b) placebo. Preparation of emulsions, isolation of sunscreen, and quantification of sunscreen by UV spectrophotometry
6. Determination of anti-dandruff agent in shampoo
7. Simultaneous determination of parabens by thin layer chromatography
8. Simultaneous detection of parabens in a cosmetic product by high performance liquid chromatography with ultraviolet detector
9. Quantification of preservatives in a cosmetic product by high performance liquid chromatography with an ultraviolet detector.
10. Liquid chromatographic determination of lipoic acid in an emulsified product with an electrochemical detector
11. Determination of hydrogen peroxide in an oxidizing emulsion for hair dye by titration with potassium permanganate
12. Liquid chromatographic separation in a cosmetic product of organic sunscreens with an ultraviolet detector.
13. Determination of relative proportion of surfactants by IR spectroscopy in shampoos and identification of raw materials
14. Quantification of fluoride in toothpaste with selective fluoride electrode

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Lectures in the classroom	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Support of learning process through e-class in the theoretical and laboratory part, Questions-exercises-answers through e-class	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place*	***Activity***	***Semester workload***
	Lectures	80
	Group autonomous laboratory work-presentation and processing of experimental results	50

ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc. *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	Excursion	10
	Independent study	70
	Course total	210
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	THEORETICAL PART Greek language Multiple choice, development, characterization of sentences as Correct or Incorrect, problem solving (100%) LABORATORY PART Greek language 1. Delivery of sheets of experimental results per laboratory exercise (30%) 2. Written exams in the laboratory exercise of the day (35%) 3. Final written examination: Multiple choice, development, characterization of sentences as Correct or Incorrect, problem solving (35%)	

5. ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

1. Βαρβαρέσου Α. και Ιακώβου Κ. Σημειώσεις Ποιοτικού Ελέγχου Καλλυντικών Προϊόντων, Αθήνα 2018

2. Βαρβαρέσου Α., Παπαγεωργίου Σ., Μέλλου Φ. και Ιακώβου Κ. Εργαστηριακές Ασκήσεις Ποιοτικού Ελέγχου Καλλυντικών Προϊόντων, Αθήνα 2017

3. Watson D.G. Φαρμακευτική ανάλυση 978-960-583-038-0, ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2014.

-Related academic journals:

1.González Z.L. Percutaneous Absorption of UV Filters Contained in Sunscreen Cosmetic Products: Development of Analytical Methods ISBN-13: 978-3319011882, Springer, 2013.

2. Salvador A. and Chisvert A. Analysis of Cosmetic Products, Elsevier, 2007

9.4.4 7th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF EDUCATION	UNDERGRADUATE		
COURSE CODE	**7011-7012**	**SEMESTER OF STUDIES**	**7th**
COURSE TITLE	ELECTRICAL DERMATOTHERAPY II-LASER		

INDEPENDENT TEACHING ACTIVITIES *in case that the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc.* *If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.*	**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Lectures, Laboratory Exercises	3L + 3LE	7
Add rows if needed. The teaching organization and the usedteaching methods are described in details in 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	SE
PREREQUISITE COURSES:	
LANGUAGE OF TEACHING AND EXAMS:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	
ELECTRONIC COURSE PAGE (URL)	

(2)LEARNING RESULTS

Learning Results

The learning outcomes of the course are described, the specific knowledge, skills and abilities of appropriate level that students will acquire after the successful completion of the course.

Refer to Appendix A.

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Summary Guide for writing Learning Outcomes*

Aim and objective of the course: Upon successful completion of this educational module, students are able to meet the requirements of the specifications of the Legislation for electrosurgical treatment and lasers. This section consolidates knowledge and techniques in electrosurgical treatment and laser hair removal. Students are monitored for therapeutic progress and final evaluation of integrated hair removal treatments as well as the management of case-by-case incidents of progressive on-the-ground dermatopathies.

Upon the successful completion of this educational module students are expected to be able to:

- provide thorough guidance in identifying indications and contraindications and design a safe and effective treatment plan and post-treatment guidelines..
- Perform permanent hair removal techniques at the level of a clinical dermatologist
- Recognize the structures of the body and systems in the context of aesthetic therapy
- Apply the methods of treatment of unwanted hair growth disorders in the context of skin treatments.
- Apply particular specialization techniques in laser and Intense Pulsed Light (IPL).
- Explain this difficult process including basic physics principles for lasers and IPL-based treatments for dermatological situations that require phototherapy
- Perform therapeutic techniques for dermatological conditions using Laser & IPL
- Design- plan treatment regimens for dermatological conditions in relation to the wavelength and the appropriate application for each Fitzpatrick phototype
- Manage Laser & IPL for special dermatological conditions with safety and confidence

General Skills

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of the following is the aim of the course?

Research, analysis and synthesis of data and information, using the necessary technologies	*Project design and management*
	Respect for diversity and multiculturalism
Adaptation to new situations	
	Respect for the natural environment
Decision making	
	Demonstration of social, professional and moral responsibility and sensitivity in gender issues
Autonomous work	

Teamwork	*Exercising criticism and self-criticism*
Working in international environment	*Promoting free, creative and inductive thinking*
Work in interdisciplinary environment	*...*
Production of new research ideas	*Others*
	...

Autonomous work

Teamwork

Working in an international environment

Work in an interdisciplinary environment

Demonstration of social, professional and moral responsibility and sensitivity in gender issues

(3)SYLLABUS

Theoretical Part of the Course

1. Selection, application and development of a method for the treatment of unwanted hair growth on the ground of dermatopathies.
2. Electrosurgical treatment. Theoretical approach to classical and modern methods of hair treatment: thermolysis, electrolysis.
3. Targeted treatment during the session - Complications.
4. Restrictions imposed by the complex biological target - hair follicle
5. Evaluation of the effectiveness of the selected method.
6. Hair growth and aging. Pigmentation and healing disorders in old age.
7. Psycho-aesthetic response to aesthetic problems on the ground of skin diseases - the ''difficult patient''.
8. Basic biophysics of laser hair removal - Principle of selective photothermolysis.
9. Advanced Laser Hair Removal Training
10. Advanced IPL hair removal training
11. The effect of hair removal lasers on the pigmentation and / or healing mechanisms
12. Dermocosmetic approach after the removal of unwanted hair growth
13. Methodology of result evaluation after the application of the selected method.

Laboratory Part of the Course

1. Hygiene and precautionary measures in the laboratory.
2. Exercise in the recognition of body structures and systems in the context of aesthetic therapy
3. Training in performing permanent hair removal techniques
4. Electrosurgical treatment.
5. Application of methods for the treatment of unwanted hair disorders on the ground of dermatopathies.
6. Design of safe and effective treatment planning and post-treatment guidelines.
7. Choosing the right work position for an aesthetician and occupational hazards.
8. Topical dermocosmetic treatment of unwanted hair growth on the ground of

skin diseases.

9. Application of particular laser specialization techniques
10. Application of specialization techniques in Intense Pulsed Light (IPL).
11. Therapeutic techniques for dermatological conditions using Laser
12. Therapeutic techniques for dermatological conditions using IPL
13. Aesthetic restoration schemes for dermatological conditions in relation to wavelength and skin phototype.

(4) TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>COURSE DELIVERY METHODS
Face to face, distance education, etc..</td><td>FACE TO FACE</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES
Use of I.C.T. in Teaching, Laboratory Education, iCommunication with students</td><td>• Use of I.C.T. in Teaching
• Use of e-mail and website of the Department for informing the students

Use of the e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.</td></tr>
<tr><td>TEACHING ORGANIZATION

The way and methods of teaching are described in detail.

Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Practice (Placement) Clinical Exercise, Art Workshop, Interactive teaching, Study visits, Projects, Writing Study / Studies, artwork, creation, etc.

The student study hours for each learning activity are listed as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures-Presentations using audiovisual media</td><td>120</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Laboratory Exercises</td><td>90</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Total course</td><td>210</td></tr>
</table>
</td></tr>
<tr><td>STUDENT EVALUATION

Description of the evaluation process

Evaluation Language, Evaluation Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Exercise, Composition / Report, Oral Examination,</td><td>EVALUATION LANGUAGE: Greek

EVALUATION METHODS:</td></tr>
</table>

Public Presentation, Public Presentation, Laboratory Ecxrcise, Clinical Examination of Patients, Artistic Interpretation, Other / Others *Explicitly defined Evaluation criteria are stated and if and where they are accessible to students.*	THEORETICAL PART: Written final examination (100%) which consists of • Essay Development Questions • Multiple Choice Test • Short Answer Questions • characterization of sentences as True or False LABORATORY PART: Written final examination (100%) which consists of • Essay Development Questions • Multiple Choice Test • characterization of sentences as True or False

(5) ATTACHED BIBLIOGRAPHY

Greek:

1. Τσιγώνια – Ευλογιά Α., ΔΕΡΜΑΤΙΚΕΣ ΣΥΝΘΗΚΕΣ ΚΑΙ ΜΕΘΟΔΟΙ ΜΟΝΙΜΗΣ ΑΠΟΤΡΙΧΩΣΗΣ – LASER, ΕΚΔΟΣΕΙΣ ΠΑΠΑΖΗΣΗ ΑΕΒΕ,2010.

2. Γκρεκ Ι., Αισθητικά προβλήματα από ενδοκρινολογικά νοσήματα, Βήτα Ιατρικές Εκδόσεις.

3. Μπατρίνος Μ., Σύγχρονη Ενδοκρινολογία, Αθήνα 1988.

4. ΛεονταρίδουΙ., Αποτρίχωση με Laser και I.P.L., University Studio Press, 2006.

Foreign language:

1. Hinkel Arthur Ralph, Lind W. Richard, Electrolysis, thermolysis and the blend. The principles and practice of permanent hair removal.

2. Besser G.M., Witt M., Hirsuties.

3. Harvey J., Photoepilation with the epil – light removal system, 1998.

4. Nestor Mark S., Laser Hair Removal: clinical results and practical application of selective photothermolysis, 1998.

5. Robert N. Richards, Meharg, G.E., (Gay E.), Gay E. Meharg, Richards, Robert N., Medric, Cosmetic and Medical Electrolysis and Temporary Hair Removal: A Practice Manual and Reference Guide, 1991.

6. David J. Goldberg, Laser Hair Removal, 2000.

7. Sheila Godfrey, Principles and practice of electrical epilation, 2001.

8. David J. Goldberg, Laser Dermatology, 2005.

9. P. Mauvais-Jarvis, Hirsutism, Springer London Limited, 1981.

10. Alan N. Elias, Hirsutism, Grant Gwin up Greenwood Publishing Group Incorporated, 1983.

COURSE OUTLINE

(1) **GENERAL**

SCHOOL	HEALTH & CARE SCIENCES			
DEPARTMENT	BIOMEDICAL SCIENCES			
DIRECTION	AESTHETICS AND COSMETIC SCIENCE			
LEVEL OF EDUCATION	UNDERGRADUATE			
COURSE CODE	**7031-7032**	**SEMESTER OF STUDIES**	**7th**	
COURSE TITLE	ENZYMATIC DERMATOTHERAPY			
INDEPENDENT TEACHING ACTIVITIES *in case that the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc.* *If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.*			**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Lectures, Laboratory Exercises			3L + 2LE	7
Add rows if needed. The teaching organization and the used teaching methods are described in details in 4.				
COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	SE			
PREREQUISITE COURSES:				
LANGUAGE OF TEACHING AND EXAMS:	GREEK			

THE COURSE IS OFFERED TO ERASMUS STUDENTS	
ELECTRONIC COURSE PAGE(URL)	

(2) LEARNING RESULTS

LearningResults

The learning outcomes of the course are described, the specific knowledge, skills and abilities of appropriate level that students will acquire after the successful completion of the course.

Refer to Appendix A.

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Summary Guide for writing Learning Outcomes*

Aim and objective of the course: The use of proteolytic enzymes to treat unwanted hair growth. The study of proteolytic enzymes in relation to their penetration into the hair follicle, the study of how enzymes act on hair regenerative cells, the proteins that are found in small amounts and are necessary for the survival of cells.

Upon the successful completion of this educational module students are expected to be able to:

- know the method of enzymatic treatment of unwanted hair growth with proteolytic enzymes
- identify the type of hair growth, the amount of enzyme and how the enzyme will be used
- become familiar with the methods of treating unwanted hair growth depending on the aetiology that creates the increased hair growth

General Skills

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of the following is the aim of the course?

Research, analysis and synthesis of data and information, using the necessary technologies	*Project design and management*
Adaptation to new situations	*Respect for diversity and multiculturalism*
Decision making	*Respect for the natural environment*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
Teamwork	*Exercising criticism and self-criticism*
Working in international environment	*Promoting free, creative and inductive thinking*
Work in interdisciplinary environment	*...*
Production of new research ideas	*Others*

Autonomous work

Teamwork

Working in an international environment

Work in an interdisciplinary environment

Demonstration of social, professional and moral responsibility and sensitivity in gender issues

(3) SYLLABUS

Theoretical Part of the Course

1. Anatomy and physiology of the skin. Generally about the hair.
2. Circular activity of the hair follicle. Hair regenerative cells and their location. Hair specificity by body areas.
3. Proteins - Enzymes. Characteristic properties of enzymes and their mode of action.
4. Classification of enzymes, allosteric modifiers. Enzyme analysis, how they work, enzyme kinetics.
5. Inhibition of enzyme reactions, pH effect, enzyme reaction rate.
6. Proteolytic enzymes with emphasis on trypsin, papain, chymotrypsin. Action of proteolytic enzymes with emphasis on the treatment of unwanted hair growth and ways of penetration.
7. Skin thresholds, how substances penetrate the skin. Iontophoresis as method, the device and ways and means of its use in the treatment of unwanted hair growth with enzymes.
8. Penetration of enzymes at different concentrations and for different iontophoresis enzymes.
9. Skin characteristics in the treatment of unwanted hair growth.
10. Pain and how to deal with it.
11. Conditions for permanent hair removal.
12. Experimental studies on the action of proteolytic enzymes on the skin of experimental animals.
13. Basic knowledge about transgenic mice, effect of proteolytic enzymes and results at the histological level of the skin.

Laboratory Part of the Course

1. Demonstration of the enzymatic method for the treatment of unwanted facial hair.
2. Learning the enzymatic method of treating unwanted hair growth in every skin type.
3. Enzymatic method of removing the unwanted hair growth, depending on the quality and the colour of the hair.
4. Enzymatic method of removing the unwanted hair growth in case that the increased hair growth is due to a hormonal problem
5. Application of enzymatic method after hair removal in hormone-dependent areas with methods of temporary treatment of unwanted hair growth and idiopathic aetiology.
6. Application of enzymatic method after hair removal in hormone-dependent areas with methods of temporary treatment of unwanted hair growth and hormonal aetiology.
7. Application of the enzymatic method in non-hormone dependent areas..
8. Application of the enzymatic method after the use of adhesive preparations.
9. Application of the enzymatic method without iontophoresis in hormone-dependent regions.

10. Application of the enzymatic method without iontophoresis in non-hormone-dependent regions.
11. Combinations of methods of permanent treatment of unwanted hair growth with the enzymatic one.
12. Application of the enzymatic method in combination with the use of Laser- IPL. Protocol implementation. Effectiveness.
13. Comparative study of the application effectiveness, based on laboratory recordings.

(4) TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>COURSE DELIVERY METHODS
Face to face, distance education, etc..</td><td>FACE TO FACE</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES
Use of I.C.T. in Teaching, Laboratory Education, Communication with students</td><td>• Use of I.C.T. in Teaching</td></tr>
<tr><td>TEACHING ORGANIZATION

The way and methods of teaching are described in detail.

Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Practice (Placement) Clinical Exercise, Art Workshop, Interactive teaching, Study visits, Projects, Writing Study / Studies, artwork, creation, etc.

The student study hours for each learning activity are listed as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures-Presentations using audiovisual media</td><td>90</td></tr>
<tr><td>Writing Study</td><td>30</td></tr>
<tr><td></td><td></td></tr>
<tr><td>LaboratoryExercises</td><td>90</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Total course</td><td>210</td></tr>
</table>
</td></tr>
<tr><td>STUDENT EVALUATION

Description of the evaluation process

Evaluation Language, Evaluation Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Exercise, Composition / Report, Oral Examination, Public Presentation, Public Presentation, Laboratory Exercise, Clinical Examination of Patients, Artistic Interpretation, Other / Others</td><td>EVALUATION LANGUAGE: Greek

EVALUATION METHODS:

THEORETICAL PART:

Written final examination (100%) which consists of:

• Essay Development Questions
• Multiple Choice Test
• Short Answer Questions
LABORATORY PART:</td></tr>
</table>

Explicitly defined Evaluation criteria are stated and if and where they are accessible to students.	50% Written examination(Multiple Choice Test, Short Answer Questions) 50% Laboratory Examination

(5) ATTACHED BIBLIOGRAPHY

Greek

1. Πρωτόπαπα Ε., Ενζυμική Αποτρίχωση, Εκδόσεις ΟΜΒΡΟΣ 1997.

2. Πρωτόπαπα Ε., Φυσιοπαθολογία και θεραπευτική διαταραχών της τριχοφυΐας, εκδ. Παπαζήσης 2004.

3. Πρωτόπαπα Ε., Νεότερες απόψεις όσον αφορά την εντόπιση των αναγεννητικών κυττάρων της τρίχας, Επιθεώρηση Κλινικής Φαρμακολογίας και Φαρμακοκινητικής 1994;12:181

4. Karlson, Doenecke, Koolmann, Βιοχημεία, εκδόσεις Λίτσας, Αθήνα 1996.

5. Zubay, Parson, Vance, Αρχές Βιοχημείας, εκδόσεις Πασχαλίδης, 1999.

Foreign language

1. Fundamentals of Enzymology, Price, Stevens, Oxforf University Press, 1999.

2. Poteases New Perspectives, Vito Turk, εκδόσεις Birkehaueser, 1999.

3. Biotechnological Applications of Proteins and Enzymes: edited by Zvi Bohak and Nathan Sharon

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CSRE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF EDUCATION	UNDERGRADUATE		
COURSE CODE	**7051**	**SEMESTER OF STUDIES**	**7th**
COURSE TITLE	ETHICS OF PROFESSION		

INDEPENDENT TEACHING ACTIVITIES *in case that the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc.* *If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.*	**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Lectures	2	4
Add rows if needed. The teaching organization and the used teaching methods are described in details in 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	CESBC
PREREQUISITE COURSES:	
LANGUAGE OF TEACHING AND EXAMS:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	
ELECTRONIC COURSE PAGE (URL)	

(2) LEARNING RESULTS

Learnimg Results

The learning outcomes of the course are described, the specific knowledge, skills and abilities of appropriate level that students will acquire after the successful completion of the course.

Refer to Appendix A.

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Summary Guide for writing Learning Outcomes*

The aim and objective of the course is to introduce the student to the ethical positions and principles of the profession- function through Ethical, Scientific and Legal parameters.

Upon the successful completion of this educational module, students are expected to:

- understand the basic principles of Ethics of their Profession
- know ways to deal with Ethical problems of their Speciality
- be familiar with the basic Rules of Ethics of their Profession
- be able to act on their own responsibility on a moral and legal level in order not to be confronted with offences leading to "prosecution" for illegal practice of the profession.

General Skills

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of the following is the aim of the course?

Research, analysis and synthesis of data and information, using the necessary technologies	*Project design and management*
Adaptation to new situations	*Respect for diversity and multiculturalism*
Decision making	*Respect for the natural environment*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
Teamwork	*Exercising criticism and self-criticism*
Working in international environment	*Promoting free, creative and inductive thinking*
Work in interdisciplinary environment	*...*
Production of new research ideas	*Others.*

Autonomous work

Teamwork

Working in an international environment

Work in an interdisciplinary environment

Demonstration of social, professional and moral responsibility and sensitivity in gender issues

(3) SYLLABUS

1. Conceptual and Historical background

2. Ethics and codes of conduct.

3. Ethical positions and principles of practice of the profession.

4. Introduction to the concept HEALTH. Basic principles of health ethics

5. Medical confidentiality- Principles of minimum ethics – Procedure

securing voluntary consent

6. Codes of Ethics, international rules and concepts, concerns and recent

developments

7. Current legislation.

8. Rights and obligations of the Aesthetician.

9. The illegal practice of the profession.

10. The teaching of Aesthetics & Cosmetology.

11. Business ethics.

12. Ethics of Aesthetics as lifelong education.

13. Interdisciplinary teams and the relationship between health care scientists.

(4) TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>COURSE DELIVERY METHODS
Face to face, distance education, etc..</td><td>FACE TO FACE</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES
Use of I.C.T . in Teaching, Laboratory Education, Communication with students</td><td>• Use of I.C.T. in Teaching
• Use of e-mail and website of the Department for informing the students
Use of the e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.</td></tr>
<tr><td>TEACHING ORGANIZATION
The way and methods of teaching are described in detail.
Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Practice (Placement) Clinical Exercise,</td><td><table><tr><th>Activity</th><th>Φόρτος Εργασίας Εξαμήνου</th></tr><tr><td>Lectures-Presentations using audiovisual media</td><td>90</td></tr></table></td></tr>
</table>

Art Workshop, Interactive teaching, Study visits, Projects, Writing Study / Studies, artwork, creation, etc. *The student study hours for each learning activity are listed as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards*		
	Total course	90
STUDENT EVALUATION *Description of the evaluation process* *Evaluation Language, Evaluation Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Exercise, Composition / Report, Oral Examination, Public Presentation, Public Presentation, Laboratory Exercise, Clinical Examination of Patients, Artistic Interpretation, Other / Others* *Explicitly defined Evaluation criteria are stated and if and where they are accessible to students.*	EVALUATION LANGUAGE: Greek EVALUATION METHODS: Written final examination (100%) which consists of: • Essay Development Questions • Multiple Choice Test • Short Answer Questions	

(5)ATTACHED BIBLIOGRAPHY

Greek

1. Πρωτόπαπα Ε., Δεοντολογία επαγγέλματος Αισθητικού, Εκδ. Παπαζήση, Αθήνα 2001.

2. Γκρεκ Ι., Αισθητική & Αισθητικοί, Εκδ. Παπαζήση, Αθήνα 2003.

3. Παπαγούνης Γ., Κείμενα Ηθικής, Εκδόσεις Παπαζήση, Αθήνα 1999.

4. Ρακιτζής Ε., Εισαγωγή στη Φιλοσοφία των φυσικών επιστημών, Εργαστήριο Βιολογικής Χημείας της Ιατρικής Σχολής του Πανεπιστημίου Αθηνών, Αθήνα 1998.

5. Κουτσελίνης Α.Σ., Βασικές Αρχές Βιοηθικής Ιατρικής Δεοντολογίας και Ιατρικής Ευθύνης, Εκδ. «Γρηγόρης Παρισιάνος – Μαρία Γρηγορίου Παρισιάνου», Αθήνα 1999.

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7041	**SEMESTER**	7
COURSE TITLE	DELIVERY SYSTEMS OF ACTIVE SUBSTANCES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SC
PREREQUISITE COURSES:	.NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	.Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/AISTH135/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the applications of the delivery systems used for increase of bio-availability of the active ingredients used in topical dermal preparations.

The goal of the course is for students to acquire the knowledge of the molecular design and development of advanced delivery systems of bioactive substances used in skin preparations.

Learning outcomes

After the end of the course students will be able to:

- design and develop delivery systems for the increase of dermal permeability of bioactive substances
- investigate a) mechanisms of release of the substances of these systems b) the physicochemical stability of the systems and the stability of bioactive substances in these systems
- Know the basic principles of nanotechnology of the skin care products
- Compare the advantages and disadvantages of the delivery systems used fir the increase of bioavailability of active ingredients
- Evaluate the environmental impact of the nanotechnology used in skin care products

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently, Working in an international environment

Working in an interdisciplinary environment, Respect for the natural environment, Showing social, professional and ethical responsibility, Production of new research ideas, Production of free, creative and inductive thinking

3. SYLLABUS

1. Delivery systems of bioactive substances. Nanotechnology. Nanometrology. Physicochemical properties of nan-delivery systems, techniques fir the characterization0electron microscopy, size dispersity index, aggregation. Nanocolloids. Applications in biomedical sciences.
2. Deliver complexes. Colloids and non colloids
3. Nan=emulsions. Liposomes-methods of preparations-methods of stability testing. Release of the incorporated ingredient. Advantages-Disadvantages of liposomes in skin care products
4. Liquid crystals. Dendrimers. Liquid crystals as emulsifiers.
5. Fullerenes. Application of fullerenes in Cosmetic Science.
6. Solid lipid nanoparticles (SLN)
7. Polymeric nanoparticles, Nanocapsules and lipid nanocarriers (NLC). Biodegradable polymers. Encapsulation of essential oils. Mechanism of release of the encapsulated ingredients
8. Metal nanoparticles and nanoparticles of chemical compounds of metals. Nano-sunscrrens-photoprotection
9. Gels. Nanofibrils, nanochitin
10. Cosmetic-textiles for the release of active substances
11. Nanotechnology in Dermatology
12. Disadvantages of the application of nano-systems
13. Introduction to regulatory affairs regarding the nanotechnology and the research in this field. Impact of nan-materials on aqueous environment.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of the learning process through e-class Exercises through e-class.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail. Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lecture	70
	Independent study	5-
	Course total	*120*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoice questionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Language Greek Final exam: multiple choice, open-ended questions, characterization of sentences as True or False, problem solving 100 % Or Final exam multiple choice, open-ended questions, characterization of sentences as True or False, problem solving 60% and public presentation 40% All criteria are given to the students

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Morgan S.E., Havelka K.O. and Lochhead R.Y. Cosmetic Nanotechnology: Polymers and Colloids in Personal Care 1st edition ISBN-13: 978-0841239968 ACS Symposium series, 2007.
2. Garti N. and Amar-Yuli I. Nanotechnologies for Solubilization and Delivery in Foods, Cosmetics and Pharmaceuticals ISBN-13: 000-1605950165, 2011.
3. Brayner R. (Editor), Fiévet F. and CoradinT. Nanomaterials: A Danger or a Promise?: A Chemical and Biological PerspectiveISBN-13: 978-1447159162, 2013.
4. Δεμέτζος Κ.Ν. Φαρμακευτική Νανοτεχνολογία : Βασικές Αρχές και πρακτικές εφαρμογές ISBN 978-960-394-988-6, ΕΠΙΣΤΗΜΟΝΙΚΕΣ ΕΚΔΟΣΕΙΣ ΠΑΡΙΣΙΑΝΟΥ ΑΕ, 2014.
5. Βαρβαρέσου Α. και Ιακώβου Κ. Συστήματα μεταφοράς δραστικών ουσιών, Αθήνα 2019.

- Related academic journals:

COURSE OUTLINE

1. GENERAL

SCHOOL	School of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7021-7022	**SEMESTER**	7
COURSE TITLE	Non-invasive treatment of obesity		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		4	7
Laboratory		2	

Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		
COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SBC	
PREREQUISITE COURSES:	..	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK	
IS THE COURSE OFFERED TO ERASMUS STUDENTS	…	
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/BISC260/	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aim and objective of the course:
Students should understand that obesity is a complex multifactorial chronic disease and an important risk factor for our health.
Acquisition of knowledge for the application of scientific massage and obesity-cellulite treatments in a healthy body, use of the appropriate treatment after evaluation of the individual, application of obesity-cellulite massage manipulations in combination with knowledge from courses related to anatomy, dermatology, physiology.
Learning results:
Incident assessment
Training of Aesthetic Intervention programs in Obesity
Preparation of Aesthetic Intervention programs in Cellulite
Treatment protocols for obesity and cellulite
Lymphatic drainage
Combination of appropriate methods for the treatment of obesity and cellulite

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work, • Teamwork, • Work in an interdisciplinary environment, • Work in an international environment	

3. SYLLABUS

Theoretical part

1. Obesity. Etiology of obesity - Complications.

2. Adipose tissue. Fat cell. Physiology - Metabolism of adipose tissue.

3. Determination of obesity - Measurement of body fat

4. Types and forms of obesity. Methods for determining obesity

5. Lymph. Lymph biology.

6. Structures of the Lymphatic System. Lymph nodes

7. Principles of lymphatic drainage

8. Introduction to cellulite. Pathogenesis - Pathology.

9. Etiology of cellulite: causes and triggers or aggravating factors of cellulite

10. Defining cellulite Detection of body fat in cellulite

11. Differential diagnosis of cellulite. Steatomas. Skin filtration due to vascular and lymphatic circulation disorders.

12. Treatment of obesity & cellulite with applications of Dermoaesthetics.

13. Pharmacological and surgical treatment of obesity-cellulite.

Laboratory Part

1. Health and safety rules

2. Massage manipulations - Features

3. Manipulation analysis: pressures - application - efficiency

4. Manipulation analysis: boredom - application - efficiency

5. Manipulation analysis: vibrations - application - efficiency

6. Lymphatic drainage manipulations. Basic principles - Pressure, direction, rhythm, succession.

7. Massage manipulation combinations (classical-lymphatic)

8. Technical errors during obesity-cellulite massage.

9. Protocol of body aesthetic treatments for the treatment of obesity - cellulite

10. Use of preparations for the treatment of obesity-cellulite. Ingredients - Properties - Efficiency

11. Tightening treatment protocols. Application of preparations. Combination therapies.

12. Application of alternative therapies. Special massage techniques.

13. Evaluation of cases and choice of method or methods. Efficiency assessment

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	• Use of ICT in teaching • Use of the e-mail and the website (e class) for communication with the students
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** — ***Semester workload*** Lectures — 90 Study-Essay writing — 60 Laboratory practice — 60 Course total — 210
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	LANGUAGE: GREEK EVALUATION METHODS 3. Theoritical part 70% Written Assessment (Multiple Choice Test, Short Answer Questions) 30% Essay 4. Laboratory 50% Written Assessment (Multiple Choice Test, Short Answer Questions) 50% Practice

5. **ATTACHED** BIBLIOGRAPHY

GREEK

1. Πλέσσας Σ. - Κίντζιου Ε., Παχυσαρκία και Κυτταρίτιδα, Εκδόσεις Φάρμακον-Τύπος, Αθήνα, 2007.
2. Αρχοντάκης Σ., Παχυσαρκία και Κυτταρίτιδα: Οι συμπληγάδες της ομορφιάς, Εκδόσεις Αδελφοί Βλάσση, Αθήνα 2003.
3. Καφάτος Α., Παχυσαρκία: Πρόληψη και Αντιμετώπιση, Εκδόσεις Ελληνικά Γράμματα, Αθήνα, 2002.
4. Πλέσσας Σ., Διαιτητική του Ανθρώπου, Εκδόσεις Φάρμακον-Τύπος, Αθήνα, 1998.
5. Πλέσσας Σ., Φυσιολογία του Ανθρώπου: Φυσιολογία του Κυττάρου, Εκδόσεις Φάρμακον- Τύπος, Αθήνα, 1994.

FOREIGN

1. Ian Campell, David Haslam: Obesity. Churchill Livingstone, London, 2005.
2. Blanchemaison P. et al.: La Cellulite. Privat, Paris, 1999.
3. Murat Howard: The cellulite Solution. Library of Congress Cataloging-In-Publication, New York, 2005.

9.4.5 8th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETIC AND COSMETIC SCIENCE		
LEVEL OF EDUCATION	UNDERGRADUATE		
COURSE CODE	**8031**	**SEMESTER OF STUDIES**	**8th**
COURSET ITLE	BIOETHICS		

INDEPENDENT TEACHING ACTIVITIES *in case that the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc.* *If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.*	**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Lectures	3	5
Add rows if needed. The teaching organization and the used teaching methods are described in details in 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	CESBC
PREREQUISITE COURSES:	
LANGUAGE OF TEACHING AND EXAMS:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	
ELECTRONIC COURSE PAGE (URL)	

(2) LEARNINGRESULTS

LearningResults

The learning outcomes of the course are described, the specific knowledge, skills and abilities of appropriate level that students will acquire after the successful completion of the course.

Refer to Appendix A.

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Summary Guide for writing Learning Outcomes*

The aim and objective of the course is the study of Bioethics, as the field of critical approach and revision of the principles and criteria of practice in the age of biotechnology and the investigation of ethical issues arising from biomedical innovations and their applications.

After the end of the course students will be able to:

- Understand the basic principles of Bioethics
- Know issues of Bioethics and Law
- Be familiar with basic methods of ethical reasoning for dealing with problems in the field of clinical practice
- have acquired solid theoretical knowledge, necessary for the scientific and professional career.
- have come in contact with the concept and current concerns of health professionals regarding Bioethics

General Skills

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of the following is the aim of the course ?

Research, analysis and synthesis of data and information, using the necessary technologies

Adaptation to new situations

Decision making

Autonomous work

Teamwork

Working in international environment

Work in interdisciplinary environment

Production of new research ideas

Project design and management

Respect for diversity and multiculturalism

Respect for the natural environment

Demonstration of social, professional and moral responsibility and sensitivity in gender issues

Exercising criticism and self-criticism

Promoting free, creative and inductive thinking

Autonomous work

Teamwork

Working in an international environment

Work in an interdisciplinary environment

Demonstration of social, professional and moral responsibility and sensitivity in gender issues

(3) SYLLABUS

1. Bioethics as a scientific discipline
2. Technology and interventions-ethical theories
3. The ethical dilemmas of biotechnology. Basic rules in scientific research
4. Organ transplants
5. Experiments on animals. Clone products
6. Clinical studies involving humans
7. Medically assisted reproduction
8. Eugenic-Stem Cells
9. Genetically modified organisms
10. Medical Ethics, Decisions towards the end of life
11. Ethics of new technologies -Artificial intelligence
12. Bioethics Committees. International Organizations -Legislative Frameworks
13. Bioethics and Education. The interdisciplinary and inter sectoral approach to knowledge

(4) TEACHING AND LEARNING METHODS - EVALUATION

<table>
<tr><td>COURSE DELIVERY METHODS
Face to face, distance education, etc.</td><td>FACE TO FACE</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES
Use of I.C.T.in Teaching, Laboratory Education, iCommunication with students</td><td>• Use of I.C.T. in Teaching
• Use of e-mail and website of the Department for informing the students

Use of the e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.</td></tr>
<tr><td>TEACHING ORGANIZATION

The way and methods of teaching are described in detail.

Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Practice (Placement) Clinical Exercise, Art Workshop, Interactive teaching, Study visits, Projects, Writing Study / Studies,</td><td>
<table>
<tr><th>Activity</th><th>Semester Workload</th></tr>
<tr><td>Lectures-Presentations using audiovisual media</td><td>90</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
</table>
</td></tr>
</table>

artwork, creation, etc. *The student study hours for each learning activity are listed as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards*		
	Total course	***90***
STUDENT EVALUATION *Description of the evaluation process* *Evaluation Language, Evaluation Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Exercise, Composition / Report, Oral Examination, Public Presentation, Public Presentation, Laboratory Ecxrcise, Clinical Examination of Patients, Artistic Interpretation, Other / Others* *Explicitly defined Evaluation criteria are stated and if and where they are accessible to students.*	EVALUATION LANGUAGE: Greek EVALUATION METHODS: Written final examination (100%) which consists of: • Essay Development Questions • Multiple Choice Test • Short Answer Questions	

(5) ATTACHED BIBLIOGRAPHY

Greek

1. Αλαχιώτης, Σ. Ν. (2004). Βιοηθική: Αναφορά στους Γενετικούς και Τεχνολογικούς Νεωτερισμούς. Αθήνα:Ελληνικά Γράμματα.
2. Γεωργόπουλος, Α. (2002). Περιβαλλοντική Ηθική, Αθήνα: Gutenberg.
3. Στ. Τσινόρεμα, Κ. Λούης,(επιστημονική επιμέλεια) Θέματα Βιοηθικής. Η Ζωή, η Κοινωνία και η Φύση μπροστά στις προκλήσεις των Βιοεπιστημών. Ηράκλειο: Πανεπιστημιακές Εκδόσεις Κρήτης,
4. Εθνική Επιτροπή Βιοηθικής (2002). Κείμενα για τη Βιοηθική. Τ. Κ. Βιδάλης-Κ. Μανωλάκου (επιμέλεια). Αθήνα:
5. Αντ. Ν. Σάκκουλας.
6. Εθνική Επιτροπή Βιοηθικής Ινστιτούτο Γκαίτε (2002). Βιοηθική και Βιοπολιτική. Αθήνα: Αντ. Ν. Σάκκουλας.
7. Ζαμπαρλούκου, Σ. (2004). Κοινωνικο-οικονομικές διαστάσεις της τεχνολογίας και

της ανάπτυξης: η περίπτωση της βιοτεχνολογία στην Ελλάδα. Αθήνα: Παπαζήση.

8. Κουτσελίνης Α.Σ., Βασικές Αρχές Βιοηθικής Ιατρικής Δεοντολογίας και Ιατρικής Ευθύνης, Εκδ. «Γρηγόρης Παρισιάνος – Μαρία Γρηγορίου Παρισιάνου», Αθήνα 1999.

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Health and Care Sciences		
ACADEMIC UNIT	Department of Biomedical Sciences - Aesthetic & Cosmetic		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	8051	**SEMESTER**	8th
COURSE TITLE	AGING - LONGEVITY		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
THEORY		3	5
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	CESBC		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE(URL)	https://eclass.teiath.gr/courses/TIE124/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6,7 & 8 of the European Qualifications Frame work for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course provides knowledge and skills related to the biological substrate of aging and longevity and the protection of the elderly. The parameters and conditions for the formation of an individual, family and social environment that ensures conditions of active and healthy

aging are examined.

The aim of the course is to educate students in understanding the biological mechanisms and parameters of aging, to recognize the progress of normal aging, well-being and longevity, the occurrence of geriatric syndromes with the accompanying morbid symptoms as well as the managing and treating of them.

The course aims to enable the student to realize his/her potential and role in shaping a healthy environment and lifestyle of aging and longevity, in the protection and support of elderly people with emphasis on self-care, independence, volunteering, adopting activities and behaviors that help individuals stay physically and mentally healthy, enhancing the family environment functionality, informing and linking them with the available – institutional or informal – support services.

Upon successful completion of the course, the student will be able to:

- understand the risk factors, the biological and psycho social parameters in aging and longevity.
- have knowledge of health issues that arise during the elderly period.
- Assess the health and welfare issues of elderly people and plan and carry out appropriate interventions aimed the protection of them.
- Use evaluation tools and methods for health and welfare needs.
- work autonomously and / or in cooperation with other health professionals in the context of providing health care services in the elderly.
- provide counseling and education on health issues that concern this age group with the ultimate goal of healthy and active aging.
- provide health care services of the elderly in the community and health facilities.

General Competences

Taking in to consideration the general competences that the degree-holder must acquire (as this appear in the Diploma Supplement and appear below) at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations Decision-making
Working independently Teamwork
Working in an international environment Working in an interdisciplinary environment Production of new research ideas
Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others…

Decision making
Working independently
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Showing social, professional and ethical responsibility and sensitivity to gender issues

3. SYLLABUS

1. Morphological, neurochemical and clinical evidence of aging.

2. Definition and concepts of aging and longevity. Theories of aging. Telomeres.

3. Population ageing of its effects. Demography-Epidemiology.

4. Healthy & Active aging. Volunteering. The importance of retirement.

5. Longevity zones. Lifestyle.

6. Risk factors. Physical activity. Falls. Vaccinations.

7. Nutritional remarks in elderly. Malnutrition-Sarcopenia.

8. Evaluation of elderly health history. Peculiarities of pharmacotherapy

9. Geriatric Syndromes. Vulnerability syndrome. Body rest. Debilitation.

10. Sexuality in elderly. Urinary incontinence.

11. Dementia. Psychosocial problems.

12. Stress and mental health. Anxiety and depression in elderly.

13. Services - entities - Institutions. Health Facilities for the elderly.

4. TEACHING and LEARNING METHODS-EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning,etc.</td><td>Face to face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
UseofICTinteaching,laboratoryeducation, Communicationwithstudents</td><td>Use of ICT in teaching,
Communication with students by e mail and the web site of Biomedical Sciences Department.
Use of e-class for slides' posting, scientific articles, useful links, questions; answers, exercises, etc.</td></tr>
<tr><td>TEACHING METHODS
Themannerandmethodsofteachingare described indetail.
Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures with the usage of audiovisual aids</td><td>40</td></tr>
<tr><td>Essay writing</td><td>30</td></tr>
<tr><td>Independent study</td><td>20</td></tr>
<tr><td></td><td>90</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboally-defineartinterpretationd evaluationratorywork,clinicalexaminationofpatient,, other
Specific criteria are given, and if and where they are accessible to students.</td><td>Written evaluation (100%) which includes:
Multiple choice questionnaire
Short-answer questions
True or false questions</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

1. Χανιώτης Φ., Χανιώτης Δ. Γηριατρική. Ιατρικές Εκδόσεις Λίτσας, 2013.(Εύδοξος: 22769283)

2. Beers Mark H.,Jones Thomas V. Merck εγχειρίδιο η υγεία στην 3η ηλικία. Εκδόσεις Broken Hill Publishers LTD, 2007.

3. Markides SK. Health and Aging. SAGE Publ. USA, 2007

4. Chernoff R. Geriatric Nutrition. Jones & Bartlet Publ.USA, 2006

5. Kagawa Y. From clock genes to telomeres in the regulation of the health span. Nutrition Reviews; 2012, 70(8):459-471

6. Haber D. Health promotion and aging. Practical applications for health professionals. Springer Publishing

Company. New York, 2010.

7. Naaldenberg J. Healthy aging in complex environments. Exploring the benefits of systems thinking for health promotion practice. Wageningen University, The Netherlands, 2011.

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8071	**SEMESTER**	8th
COURSE TITLE	DERMATOLOGY AND AESTHETIC IN SPECIFIC POPULATIONS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course,give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	3	5
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	CESBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6,7 & 8 of the European Qualifications Frame work for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of the course is to understand the hormonal, immunological and skin changes that are taking place during pregnancy.
Students will become familiar with the specific dermatoses of pregnancy and the topical and systemic drugs that can be administered during this period. In addition, it will be emphasized the risks of aesthetic treatments being performed during pregnancy and the role of aesthetic practitioners in improving the appearance of pregnant women.

General Competences

Taking in to consideration the general competences that the degree-holder must acquire (as this appear in the Diploma Supplement and appear below) at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations Decision-making
Working independently Teamwork
Working in an international environment Working in an interdisciplinary environment Production of new research ideas
Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others…

Working independently
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Showing social, professional and ethical responsibility and sensitivity to gender issues

3 SYLLABUS

1. Endocrine changes in pregnancy
2. Immunological changes in pregnancy
3. Physiological skin changes in pregnancy
4. Specific dermatoses of pregnancy
5. Pruritus and pregnancy
6. Dermatoses affected by pregnancy
7. Genital herpes and pregnancy
8. Local medications and pregnancy
9. Systemic medications and pregnancy
10. Laser hair removal and pregnancy
11. Botulinum toxin and pregnancy
12. Peelings and pregnancy
13. Fillers and pregnancy
14. Pregnancy aesthetics

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, Communicationwithstudents*	Use of ICT in teaching, Communication with students by e mail and the web site of Biomedical Sciences Department. Use of e-class for slides' posting, scientific articles, useful links, questions; answers, exercises, etc.	
TEACHING METHODS *Themannerandmethodsofteachingare described indetail. Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures- interactive teaching	60
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summative or conclusive,multiple choice questionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,art interpretation, other* *Specifically-defined evaluation criteria are given ,and if and where they are accessible to students.*	• Multiple-choice questionnaires • True or False questions	

5. ATTACHED BIBLIOGRAPHY

1. Κουμαντάκη-Μαθιουδάκη Ε, Ράλλης Ε. Δερματολογία & Εγκυμοσύνη. Ιατρ. Εκδ. Κωνσταντάρας, Αθήνα, 2014.

2. Wolfgang J. Pregnancy Dermatosis. In: Mark G. Lebwohl, Warren R. Heymann, J, Bert-Jones J, and Coulson L, (Eds). Treatment of Skin Disease - Comprehensive therapeutic strategies. 2nd edition. New York, Mosby; 2006, p: 520-25.

COURSE OUTLINE

1. GENERAL

SCHOOL	School of Health and Care Sciences		
ACADEMIC UNIT	Department of Biomedical Sciences - Aesthetic & Cosmetic		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	AISTH168	**SEMESTER**	8th
COURSE TITLE	Aesthetic Physical Fitness		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course,give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
THEORY AND PRACTICE	3(2TH+1W)	5
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	CSEBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6,7 & 8 of the European Qualifications Frame work for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the students' knowing of the basic concepts and principles of exercise. Through this course chapters students will know the adjustments of human body and the recognition of exercise benefits. In addition, they will gain knowledge about the types of exercise and be able to recognize which exercise is suitable for any individual case so they can suggest and advise in their workplace.
The goal of the course is the students' introduction to the science of Physical Fitness.
Learning outcomes: After the end of the course, students will be able to know:

- ✓ The exercise effects and the adjustments of human body at the cardiac, metabolic and musculoskeletal levels.

- ✓ The effect of exercise and physical activity on psychomotor and physical development and aging.
- ✓ The content of a fitness program that is applied in the context of aesthetics.
- ✓ The evaluation norms of the exercise depending on the type of exercises and the requirements of the client
- ✓ The popular types of training are proposed for the aesthetic improvement of the body (weight training, pilates, bands, aqua aerobic, aerobics, aerobics, etc.)
- ✓ Exercises and prepare an exercise program for special categories of trainees with: chronic diseases, eating disorders, obesity, cellulite, pregnancy, etc.

General Competences

Taking in to consideration the general competences that the degree-holder must acquire (as this appear in the Diploma Supplement and appear below) at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations Decision-making
Working independently Teamwork
Working in an international environment Working in an interdisciplinary environment Production of new research ideas
Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others…

Search for analysis and synthesis of data and information, with the use of the necessary technology
Working independently

3. SYLLABUS

Theoretical part

- Concept of exercise – definition. Human body – cardiac, metabolic and musculoskeletal adaptations. Determination of heart rate, aerobic capacity, VO2max. Effect of exercise on the psychomotor development of human, aging and physical development.
- Factors that affect the level of physical activity. Exercise Dosage. Pyramid of Physical Activity. Evaluation with the Pyramid of Physical Activity.
- Principles of exercise: Overload, progressive change, specialization, reversibility, reduced effect.
- Preparation for exercise, ability to participate and necessary medical examinations, appropriate clothing and footwear. Treatment of minor injuries in exercise.
- Types of exercises: Aerobic, Anaerobic, Isotonic and Isometric exercise. Parts of an exercise program.
- Benefits of exercise and physical activity on health. Physical activity and Chronic Diseases.
- Aerobic exercise. Types and equipment of aerobic exercise.
- Stretching exercises. Types and utility in health promotion. Ergonomic body position, exercise for proper aesthetic result.
- Progressive resistance training. Weight machines, benefits of weight training, bands, Fit balls.
- Exercise in the water. Effect of water on the human body.
- Controversial exercises and safe alternatives.
- Obesity and Physical activity. Body Mass Index. Other methods of assessment and

evaluation. Exercises to improve the aesthetic result.

- Special categories of athletes: Physical activity and pregnancy. Exercise and elderly.

Practical part

- Types of exercise. Indicative exercise programs.
- Stretching. Exercises for ergonomic body position.
- Aerobic exercise. Use of treadmill, bicycle, stepper, elliptical trainer
- Use of fitness and weight equipment.
- Use of other fitness equipment– bands, fit balls, body weight training.
- Practical application of exercise for different categories of athletes.
- Controversial exercises and practical application of alternatives exercise.
- Exercise programs in relation to objects related to the science of aesthetics.
- Exercises in the water (aqua aerobic) in a swimming pool.
- Specialized fitness programs for obesity and cellulite.
- Practical application of an exercise in pregnancy
- Individual exercise program with specific parameters to be defined by the teacher.
- Power Point presentation and carrying out of individual training programs

4. TEACHING and LEARNING METHODS-EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face lectures in the class room.
Practical part in the University’s gym</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, Communication withs tudents</td><td>Use of ICT in teaching, laboratory education, Communication with students</td></tr>
<tr><td>TEACHING METHODS
Themannerandmethodsofteachingare described indetail. Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeach learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>30</td></tr>
<tr><td>Laboratory practice</td><td>15</td></tr>
<tr><td>Project in individual training program</td><td>10</td></tr>
<tr><td>Aqua aerobic seminars</td><td>5</td></tr>
<tr><td>Course total</td><td>60</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation, other
Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.</td><td>Theoretical part:
Written evaluation (100%) which includes:
Multiple choice questionnaire
Short – answer questions
True or false questions
Open – ended questions
Practical part:
practical and oral examination (50%)
practical courses participation (25%)
Project presentation (25%)</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

1. Corbin Charles B., Lindsey Ruth, Welk Greg. ΑΣΚΗΣΗ – ΕΥΡΩΣΤΙΑ – ΥΓΕΙΑ, επιστημονική επιμέλεια Β. Κλεισούρα, 10η έκδοση, Ιατρικές Εκδόσεις Π.Χ.Πασχαλίδη, 2001, ISBN 960-8122-75-9

2. Mc Ardle William D., Katch Frank I., Katch Victor L. Φυσιολογία της Άσκησης Τόμος Ι & ΙΙ, επιστημονική επιμέλεια Β. Κλεισούρας, 2η έκδοση, Ιατρικές Εκδόσεις Π.Χ. Πασχαλίδη, 2001, ISBN set 960-8122-76-7

3. Delavier Frederic, Προπόνηση για ενδυνάμωση και σύσφιξη στις γυναίκες, επιμέλεια ελληνικής έκδοσης Κ. Νάτσης, Π. Σκανδαλάκης, Ιατρικές Εκδόσεις Π.Χ.Πασχαλίδη, ISBN 13: 789603995005

4. Ferris Jo, The Pilates bible, Octopus Publishing Group, 2013, ISBN 9781841814230

5. Delavier F., Clemenceau J.P., Gundill M. Delavier' s Stretching Anatomy, Human Kinetics Pub., ISBN 9781450413985

6. Williamson P., Θεραπευτική άσκηση για ειδικούς πληθυσμούς, επιμέλεια ελληνικής έκδοσης Καπράλη Ε. & Μπίλλη Ε. Ιατρικές Εκδόσεις Κωνσταντάρας, 2016, ISBN 9789606802966

7. Endacott Jan, The fitball workout (ασκήσεις ισορροπίας με τη μπάλα fitball), εκδόσεις Πατάκη, 2010, ISBN 9789601637655

8. Adami M.R., Aqua fitness: the low impact total body fitness workout, Dorling Kindersley Book, 2002, ISBN 0-7513-3997-0

9. Αντωνίου Πέτρος, Ασκήσεις με λάστιχα, Αθλότυπο, 2002, ISBN 13: 9789607378361

10. Παξινός Θ. & Χαβενετίδης Κ., Νόρμες αξιολόγησης για άσκηση και ευρωστία, Αθλότυπο, 2011, ISBN 978-960-7378-96-5

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
DIRECTION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF EDUCATION	UNDERGRADUATE		
COURSE CODE	**80131**	**SEMESTER OF STUDIES**	**8th**
COURSE TITLE	**SKIN LASER APPLICATIONS AND PHOTONICS**		

INDEPENDENT TEACHING ACTIVITIES *in case that the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc.* *If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits.*	**WEEKLY TEACHING HOURS**	**CREDIT UNITS**
Lectures	**3**	**5**
Add rows if needed. The teaching organization and the usedteaching methods are described in details in 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	CESBC
PREREQUISITE COURSES:	
LANGUAGE OF TEACHING AND EXAMS:	GREEK
THE COURSE IS OFFERED TO ERASMUS STUDENTS	
ELECTRONIC COURSE PAGE (URL)	

2. LEARNING RESULTS

Learnimg Results

The learning outcomes of the course are described, the specific knowledge, skills and abilities of appropriate level that students will acquire after the successful completion of the course.

Refer to Appendix A.

- *Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area*
- *Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Summary Guide for writing Learning Outcomes*

The aim of the course is the understanding by the students of the action of Laser and IPL, their distinction and the indications for their application.

They will know the types of Lasers that are applied in Dermatology and also the types that are suitable for hair removal.

The use of Lasers in hair removal, the protection measures that must be taken and the side effects that may arise from their use will be analysed. The necessary information of the prospective patient for Laser application and the ways of dealing with possible side effects will be mentioned.

Upon the completion of the course, students will know the types and categories of lasers applied for hair removal on the skin, the protection measures they should take for themselves and their patients, as well as the side effects from the application of laser radiation.

General Skills

Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below), which of the following is the aim of the course ?

Research, analysis and synthesis of data and information, using the necessary technologies	*Project design and management*
Adaptation to new situations	*Respect for diversity and multiculturalism*
Decision making	*Respect for the natural environment*
Autonomous work	*Demonstration of social, professional and moral responsibility and sensitivity in gender issues*
Teamwork	*Exercising criticism and self-criticism*
Working in international environment	*Promoting free, creative and inductive thinking*
Work in interdisciplinary environment	*...*
Production of new research ideas	*Others*
	...

Autonomous work

Teamwork

Working in an international environment

Work in an interdisciplinary environment Demonstration of social, professional and moral responsibility and sensitivity in gender issues

3. SYLLABUS

1.	Definition and physics of LASER
2.	Laser penetration into the tissues
3.	IPL - Definition, mode of action
4.	Laser Applications in Medicine
5.	Laser applications in Dermatology
6.	The use of Laser in hair removal
7.	Ruby Laser
8.	Alexandrite Laser
9.	Diode Laser
10.	ND YAG Laser
11.	Approach and inform the patient about the Laser
12.	Laser application in women with endocrine diseases
13.	Laser application in pregnancy
14.	Protection measures during Laser application
15.	Side effects from Laser application in Dermatology
16.	Dealing with side effects

4. TEACHING AND LEARNING METHODS - EVALUATION

COURSE DELIVERY METHODS *Face to face, distance education, etc..*	FACE TO FACE
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES *Use of I.C.T.in Teaching, Laboratory Education, iCommunication with students*	• Use of I.C.T. in Teaching • Use of e-mail and website of the Department for informing the students Use of the e-class for posting slides, scientific articles, useful links, questions-answers, exercises, etc.

TEACHING ORGANIZATION *The way and methods of teaching are described in detail.* *Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Practice (Placement) Clinical Exercise, Art Workshop, Interactive teaching, Study visits, Projects, Writing Study / Studies, artwork, creation, etc.* *The student study hours for each learning activity are listed as well as the non-guided study hours so that the total workload at the semester level corresponds to the ECTS standards*	***Activity***	***Semester Workload***
	Lectures-Presentations using audiovisual media	90
	Total course	***90***
STUDENT EVALUATION *Description of the evaluation process* *Evaluation Language, Evaluation Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Exercise, Composition / Report, Oral Examination, Public Presentation, Public Presentation, Laboratory Exercise, Clinical Examination of Patients, Artistic Interpretation, Other / Others* *Explicitly defined Evaluation criteria are stated and if and where they are accessible to students.*	EVALUATION LANGUAGE: Greek EVALUATION METHODS: Written examination with multiple choice and / or characterization of sentences as True or False.	

5. ATTACHED BIBLIOGRAPHY

- Han G. Applications of lasers in medical dermatology. Cutis. 2014; 94: E20-3.
- Hamoudi WK, Ismail RA, Shakir HA. Construction and temporal behaviour study of multi RLC intense light pulses for dermatological applications. J Cosmet Laser Ther.; 19: 325-33.
- Sadighha A, Mohaghegh Zahed G. Meta-analysis of hair removal laser trials. Lasers Med Sci. 2009; 24: 21-5

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΚΔ 80111	**SEMESTER**	8
COURSE TITLE	AESTHETIC AND DERMATO-COSMETIC SCIENCE IN ONCOLOGY PATIENTS		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	*CESBC*		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	LANGUAGE		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/AISTH166/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand a) the classification of the anticancer drugs that cause skin adverse effects and their mechanism of action with emphasis to the targeted therapy (kinase inhibitors, monoclonal antibodies b) skin adverse effects of radiotherapy c) the drugs and dermato-cosmetics usually used for the treatment of skin adverse effects and d) the basic principles of dermato-oncology

The goal of the course is for the students to acquire the necessary knowledge for the efficient support of the pharmaceutical and dermato-cosmetic treatment of the skin adverse effects of the chemotherapy and radiotherapy.

Learning results

After the end of the course the students will be able to know:

- The mechanism of action of the classic anticancer agents and targeted therapy, as well

- The adverse skin effects of the classic anticancer agents and the targeted therapy, as well
- The skin adverse effects of radiotherapy
- The pharmaceutical and dermato-cosmetic treatments used for the precaution or the decrease of intensity and the frequency of skin adverse effects due to chemotherapy/radiotherapy
- The systemic and topical medications indicated for the skin adverse effects in oncology patients

And will be able to:

Be members of groups of supportive dermato-oncology and to support efficiently in the clinical practice the treatment of skin adverse effects of chemotherapy, targeted therapy and radiotherapy.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently, team work, working in an interdisciplinary environment, working in an international environment. Contact with sensitive groups of the population, research pre-graduate study in clinical practice	

3. SYLLABUS

1. Supportive Dermato-oncology.
2. Classification of the anticancer drugs and their mechanism of action.
3. Classic Chemotherapy: Mitosis inhibitors (taxanes, Vinca alkaloids) and skin adverse effects: alopecia, itching, dryness, erythema, hand-foot syndrome, dark lines on the nails, abnormal development of the nails, onycholysis. Pharmaceutical and dermato-cosmetic treatment.
4. Classic Chemotherapy-Mechanism of action: Genotoxic drugs. Platinum derivatives. Intercalation compounds, inhibitors of topoisomerase I (topotecan). Skin adverse effects: erythema, itching, localized hyperpigmentation, hand-foot syndrome, alopecia. Classic chemotherapy: Antimetabolites and moderate skin adverse effects.
5. Medical camouflage (PMU) for the restoration of the eye-brows alopecia in oncology patients as a part of psychological support methods. Chemical classification of the colors used. Safety of these colors and the PMU techniques for the oncology patients.
6. Targeted therapy. Tyrosine kinase inhibitors. Inhibitors of the epidermal growth factor receptor (EGFRIs gefitinib, erlotinib, EGFR/Erb2 - lapatinib) and monoclonal antibodies (mAbs).
7. Tyrosine kinase and pustular rash and maculopapular rash. Distortion of the skin barrier. Classification of the rash according to National Cancer Institute (N.C.I) 4.03 criteria, Topical use of steroids. Calcineurin. Pharmaceutical algorithm according to the N.C.I criteria. Dermato-cosmetic preparations for the limitation of the rash.
8. EGFRIs and skin dryness-xerosis, Skin hydration preparations-ingredients-types of emulsions indicated. Bandages with emollients. EGFRIs and itching. Dermato-cosmetic methods for the treatment of itching. Pharmaceutical treatment: pregabalin and gabapentin. EGFRIs and paronychia. EGFRIs and hair growth-trichomegaly.
9. Multiple kinase inhibitors (MKIs). Vascular endothelial growth factor receptor inhibitors (VEGFRIs) and platelet derived growth factor inhibitors (PFGFRIs). VEGFRIs and rash. Classification according to 4.03 criteria (N.C.I). Xerosis. Erythrodysesthesia plaque. Dermato-cosmetics for the first stages of rush.
10. RAS-RAF-MEK-ERK inhibitors. Mechanism of action. Kinase inhibitors. BRAF inhibitors and skin adverse effects. Rash, hyperkeratosis, keratoacanthomas. Photoprotection during therapy with BRAF inhibitors.
11. MEK inhibitors. Mechanism of action and skin adverse effects. Maculopapular rash, xerosis, paronychia, pruritus.
12. Radiotherapy and targeted therapy with monoclonal antibodies. Correlation between therapy with mAbs i.e cetuximab and intensity of the rash (therapeutic index)
13. Radiotherapy and skin adverse effects, hyaluronates and antioxidants in the treatment of the skin adverse effects of radiotherapy.

4. **TEACHING and LEARNING** METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of learning process through e-class Exercises through e-class. Communication with students	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	50
	Independent study	40
	Course total	90
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Geek language Multiple choice questionnaires, open-ended questions, characterization of sentences as True or False, critical questions proving the understanding (100%) Criteria are given	

5. **ATTACHED** BIBLIOGRAPHY

Suggested bibliography:

1. Χανιώτης Φ. Φαρμακολογία, Αθήνα 2014, ISBN: 978-960-372-205-2. Εκδόσεις Κ& Ν ΛΙΤΣΑΣ ΟΕ.
2. Βενετίκου Μ και Ιατράκης Γ. Επίκαιρα θέματα Φαρμακολογίας, Αθήνα 2014, ISBN: 978-618-81414-0-7. Εκδόσεις: ΖΕΒΕΛΕΚΑΚΗΣ Γ. ΚΑΙ ΣΙΑ ΕΕ
3. Σκουρολιάκου Μ. Βασικές έννοιες στη Φαρμακολογία, Αθήνα 2017.
4. Lacouture M.E Dermatologic Principles and Practice in Oncology: Conditions of the Skin, Hair, and Nails in Cancer Patients Edit. Lacoutoure ME, New York 2013.ISBN-13: 978-0470621882,
5. Lacouture M.E. Skin Care Guide for people living with cancer, New York 2012.

Related academic journals:

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8011	**SEMESTER**	8
COURSE TITLE	Alternatives Therapies		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSET YPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CESBC
PREREQUISITE COURSES:	..
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	…
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/BISC198/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aim and objective of the course:

Acquisition of knowledge of manipulations and methods to promote the mental and physical well-being, use of the appropriate method of aesthetic aromatherapy after evaluation of each individual in combination with knowledge from courses related to anatomy, dermatology, physiology and psychology.

Learning results:

1. Being able to apply aromatherapy techniques.
2. Evaluate the incidents and choose the method or methods that would provide the best result.
3. To assess and select the appropriate program according to its indications-contraindications, for each incident.
4. To compose treatment programs
5. To apply traditional and contemporary aromatherapy techniques.
6. To comply with hygiene regulations.
7. To adapt any new method in relation to Aesthetic treatment.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work, • Teamwork, • Work in an interdisciplinary environment, • Work in an international environment	

3. SYLLABUS

1.Aromatherapy: Analysis of the term aromatherapy, historical background.

2. Essential oils and conditions of their use.

3. Characteristics of essential oils

4. Production methods - Purity - Volatility

5. Classification of essential oils

6. Properties - use of essential oils-Dosage

7. Indications - contraindications.

8. Methods of application in Aesthetics

9. Massage using essential oils. Effect on the skin. Treatment of skin diseases.

10. Effect of aesthetic aromatherapy on the nervous system, respiratory system, muscular system.

11. Applications of Aesthetic Aromatherapy in the treatment of stress, psychological disorders and depression.

12. Essential oils and alternative therapies. Effect on infections. Efficacy of essential oils in relieving cancer patients

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	• Use of ICT in teaching • Use of the e-mail and the website (e class) for communication with the students

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Lectures	60
Study-Essay writing	30
Course total	90

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

LANGUAGE: GREEK

EVALUATION METHODS
70% Written Assessment (Multiple Choice Test, Short Answer Questions)
30% Essay

5. **ATTACHED** BIBLIOGRAPHY

GREEK

1. Μέθοδοι Ευεξίας και Χαλάρωσης στην Αισθητική Σώματος, ΚΑΡΑΤΣΗ ΠΑΝΑΓΙΩΤΑ, ΕΚΔΟΣΕΙΣ ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΜΑΚΕΔΟΝΙΑΣ, 2014

2. Αισθητική Σώματος Ι Βλαχόπουλος Σπύρος, ΕΚΔΟΣΕΙΣ ΚΑΥΚΑΣ ΕΠΕ, 2010

Φυσιολογία του Ανθρώπου, Σταύρος Τ. Πλέσσας, Εκδόσεις Ε. Πλέσσα, 2010

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5. Αρωματικά φαρμακευτικά φυτά και αιθέρια έλαια , Σταύρος Κατσιώτης, Πασχαλίνα Χατζοπούλου , Αφοί Κυριακίδη, 2010

6. Τα λουτρά της Ελλάδας, Συλλογικό έργο, Εκδόσεις Καστανιώτη, 2012

FOREIGN

1. The Spa Book: The Official Guide to Spa Therapy, Jane Crebbin-Bailey, John Harcup, 2005

2. Thalassotherapy, Jesse Russell, Ronald Cohn, 2012

3. Duggan J. & Duggan S., Massage. Hydrotherapy & Healing Oils. Inner Vision Publishing Company: Virginia Beach: VA.

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COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	AESTHETICS AND COSMETIC SCIENCE		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8061	**SEMESTER**	8
COURSE TITLE	Hygiene and Epidemiology		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESBC		
PREREQUISITE COURSES:	..		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THECOURSEOFFEREDTO ERASMUSSTUDENTS	…		
COURSE WEBSITE(URL)			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to train students on the basic principles of Public Health and Epidemiology so that they are able to deal with issues of medical prevention health promotion and handle Public Health issues.
The objective is for students to consolidate the subjects of Hygiene and Epidemiology and to understand basic principles of data collection and evaluation as well as the design of research-studies.
Learning results: Upon completion of the course the student will be able to:
consolidate the Cognitive Hygiene items
understand the basic concepts of descriptive epidemiology learn the general principles of Preventive Medicine
understand what is medicine and how it is practiced based on evidence
get acquainted with some basic forecasting systems
know and understand the basic principles of data collection and evaluation
become familiar with the design of research studies, questionnaires, biological indicators, vigilance methods.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

- Autonomous work,
- Teamwork,
- Work in an interdisciplinary environment,
- Work in an international environment

3. SYLLABUS

- Definitions and concepts of Health and Disease, Prevention and Precaution
- Factors Affecting Health, Outcomes and Disease Impact Measuring the level of health. Sources and Outbreaks of causal factors
- Mechanisms of spread of infectious agents. Analysis of characteristics of the disease
- General measures to prevent infectious diseases: limiting the spread infectious agents, disinfection application
- Control and restriction of receptors for infectious agents, isolation of infectious individuals. Basic principles of immunity and immunoprophylaxis, natural, acquired and collective immunity
- Basic concepts of descriptive epidemiology. General principles of prevention of medicine. Causality. Evidence and indications in medical practice.
- Outcome measures and relationship measures. Predictive systems. Characteristics and evaluation of diagnostic tests.
- Assessment of therapeutic agents and measures of therapeutic effect and assessment of side effects.
- Epidemics. Diet, exercise. Consulting interventions. Behaviors with major effects on public health (smoking, alcohol, driving).
- Occupational Hygiene. Indicative preventive measures depending on age.
- Vaccines and chemoprophylaxis. Indicative preventive measures in specific populations.
- Statistical concepts in epidemiology and clinical practice, assumptions and probabilities. Random errors, selection errors, confusion, information errors.
- Meta-analysis: principles, design, evaluation, standard errors. Decision analysis. Quality of life analyzes. Cost-effectiveness studies. Health level and health services. Load of morbidity. Global health forecasts for the future.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	• Use of ICT in teaching • Use of the e-mail and the website (e class) for communication with the students

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Lectures	90
Course total	90

STUDENT PERFORMANCE EVALUATION
Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

LANGUAGE: GREEK

EVALUATION METHODS
Written Assessment (Multiple Choice Test, Short Answer Questions)

5. **ATTACHED** BIBLIOGRAPHY

•Χαριζάνη Φ.Θ.(2004) Λοιμώξεις και προληπτικά μέτρα, Εκδ. Παπαζήση, Αθήνα.

•Δαρβίρη Χ. (2007) Προαγωγή Υγείας, Εκδ. Πασχαλίδης, Αθήνα.

•Παπαευαγγέλου Γ., Φαρμάκη Γ. (1998) Πρόληψη και έλεγχος λοιμωδών νοσημάτων, Εκδ. Ζήτα, Αθήνα.

•Τριχόπουλος Δ. (2002) Επιδημιολογία, αρχές, μέθοδοι, εφαρμογές, Εκδ.

Παρισιάνος, Αθήνα.

•Τούντας Γ. (2001) Κοινωνία και Υγεία, Εκδ. Οδυσσέας/Νέα Υγεία, Αθήνα.

•Αρχές Αποδεικτικής Ιατρικής: Επιδημιολογία, Δημόσια Υγιεινή, Μέθοδοι Έρευνας, Ι. Ιωαννίδης. Εκδόσεις Λίτσας, Αθήνα 2000

•Εισαγωγή στη Σύγχρονη Επιδημιολογία, Ahlbom, S Norel, Εκδόσεις Λίτσας, Αθήνα 1992

•Epidemiology: An Introduction, Kenneth J. Rothman Oxford University Press, 2012

•Epidemiology: Beyond the Basics, Moyses Szklo, F. Javier Nieto Jones & Bartlett Publishers, 2012

•Applied Epidemiology: Theory to Practice, Ross C. Brownson, Diana B. Petitti Oxford University

Press, 2006

•Basic Statistics and Epidemiology: A Practical Guide, Antony Stewart Radcliffe Publishing, 2010

•Clinical Epidemiology: How to Do Clinical Practice Research, R. Brian Haynes Lippincott Williams & Wilkins, 2012

COURSE OUTLINE

1. GENERAL

Learningoutcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquirewith thesuccessfulcompletion of thecoursearedescribed.

ConsultAppendixA

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMICUNIT	Department of Biomedical Sciences		
SECTOR	Aesthetics and Cosmetics		
LEVELOFSTUDIES	UNDERGRADUATE		
COURSECODE	8011	**SEMESTER**	8th

The course aims at:

(a) providing basic theoretical knowledge on the biological effects of coherent and conventional sources of optical radiation, with an emphasis on Laser systems used in medical / aesthetic practice.

b) providing specialized knowledge and skills related to basic principles of protection and compliance with laser use safety rules

c) familiarizing the student with laser's parameters, through simple measurements, that characterize the radiation, as well as the assessment of the risks associated with them and compliance established workplace protection rules and protocols.

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the DiplomaSupplementandappearbelow),atwhichofthe following doesthecourseaim?

Search for, analysis and synthesis of data and information,withtheuseofthenecessarytechnology	Working independentlyTeamwork Working in an international environmentWorking in an interdisciplinary environmentProductionof new researchideas ProjectplanningandmanagementRespect
Adapting to new situationsDecision-making	

for difference and multiculturalismRespectforthenat uralenvironment

Showing social, professional and ethical responsibility andsensitivityto genderissues

Criticismandself-criticism

Productionoffree,creativeandinductivethinking

……

Others…

…….

Search, analysis and synthesis of data and information, using the necessary technologies

- Autonomous work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking
- Exercise criticism and self-criticism

2. SYLLABUS

- Basic principles of Photonics, Nature and Properties of electromagnetic radiation
- Principles of Laser technology: Basic principles of operation, Beam modulation, Radiation properties, comparison with conventional light sources.
- Laser radiation_ Generation and transmission systems
- Interactions of Laser radiation with matter. Biological effect of radiation.
- Laser safety and protection. Dangers - Protection. Personal Protective Equipment.
- Risk assessment, dosage issues, protection and safety of Laser radiation, safety & protection protocols.
- Legislative framework for the use and operation of Laser systems in health and compliance with safety standards and protocols.
- Laser applications in Medicine & Aesthetics
- Measurements of Laser radiation characteristics, experimental data processing and risk assessment.

3. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face, in the classroom or Demonstration in Physics Laboratory
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Presentations and lectures using audiovisual media. • Use of ICT in teaching and laboratory training • Use of email and course website for communication and for informing students respectively • Provision of educational material from the internet through the course website on the Moodle platform, containing reports, references, software and general information, posting and distribution of scientific articles, instructions, lectures, questionnaires, information for attending seminars related to the course, etc.. • Performance, presentation and demonstration experiments with instruments in the classroom. • Assignment of homework and posting of them on the course website
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** | ***Semester workload*** Lectures-Presentations using audiovisual media | 70 Laboratory Exercise | 20 | Course Total | 90
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Theory 1. Final exam Multiple choice questions • Development questions • Questions of judgment, understanding of the lesson material. 2. Optional presentation of a homework, which can be graded up to 40% in the degree of the lesson. 3. Analysis of measurement data (optional can be graded up to 20% in the degree of the lesson).

5. **ATTACHED** BIBLIOGRAPHY

Bibliography (Translation in Greek)

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2. Laser και Αισθητική, Θεοδώρου Κική, Ζαφειρίου Ευτέρπη, Ρουσσάκη-Σούλτσε Αγγελική-Βικτωρία, Ευαγγέλου Νάθαν, Κάππας Κωνσταντίνος Βιβλίο [77120646]

Other sources:

1. Laser and IPL technology in dermatology and aesthetic medicine 2011 Editors: Raulin, Christian, Karsai, Syrus (Eds.)
2. Laser and non-linear optics - Laser safety
3. Non-binding guide to good practice for implementing Directive 2006/25/EC 'Artificial Optical Radiation
4. Fundamentals of Photonics

1.1 Nature and Properties of Light Linda J. Vandergriff

1.2 Light Sources and Laser Safety Fred Seeber

5. JohnWilsonandJohnHawkes, Οπτοηλεκτρονική: μία εισαγωγή, Πανεπιστημιακές Εκδόσεις Ε.Μ.Π., Αθήνα 2007 (μετάφραση, Τρίτη αγγλική έκδοση).
6. Ιατρικά Lasers, Επιστήμη και Κλινική Εφαρμογή, CarruthJ. A. S.,McKenzie A. L. μτφσ. Σεραφετινίδης Α., Μακροπούλου Μ. Βιβλίο Εύδοξος [45478]
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8. American National Standard Institute: Z136.1, Standards for safe use of lasers in health and care facilities, 2007
9. Σ. Κοττου "Τα Laser και οι εφαρμογές τους" 2009

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	8091	**SEMESTER**	8
COURSE TITLE	Natural & Organic Cosmetics		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
Lectures	3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CEBC
PREREQUISITE COURSES:	No
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek

IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/AISTH165/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *DescriptorsforLevels6,7&8oftheEuropeanQualificationsFrameworkforLifelongLearningand Appendix B*
- *Guidelines for writing Learning Outcomes*

The scope of the course is for students to understand the basic principles of research, development, design and production of natural and organic cosmetics.

The aim of the course is to teach students the regulations concerning natural and organic (organic) cosmetics, the criteria for selection of ingredients and materials packaging, international and national certification standards, labeling requirements, environmental obligations and criteria for control, storage production and inspections.

Learning results:

After the end of the course, students will be able to know:

- The principles of design and development of natural and biological cosmetics and the differences between "conventional" cosmetics.
- The criteria for selecting and calculating the percentage of natural and organic (biological) ingredients contained in the final composition.
- Permitted ingredients and prohibited chemical processes production of raw materials, packaging materials and production of finals products.
- The basic "claims" that must also be mentioned which must be indicated in order to bear its marking their certification by international certification organizations.
- The criteria for the selection of packaging materials for these cosmetics and the rules of their environmental management.
- The obligations of the manufacturer, which must be observed for fulfillment of inspection and control criteria by international certification organizations.
- The basic principles and the various criteria of international organizations certification of Natural- Organic (organic) cosmetics.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Adapting to new situations Decision-making	Showing social, professional and ethical responsibility and sensitivity to gender issues
Working independently Team work	Criticism and self-criticism
Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Production of free, creative and inductive thinking
	……

	Others… …….
Autonomous working, working in interdisciplinary environment, working in international environment, working independently team work, adapting to new situations decision-making	

3. SYLLABUS

Lectures

1. Definition-categories of cosmetics: Synthetic, Natural, Organic (organic) cosmetics
2. Rules and principles of various national and international certification bodies
3. natural and biological products (ΔΗΟ, COSMOS, ICEA, SOIL, BDIH, ECOCERT, USDA).
4. Origin, processing and selection criteria of allowed and not allowed ingredients. Water, minerals, naturally processed herbal ingredients, chemicals processed herbal ingredients, other ingredients. Prohibited chemicals processes (halogenation, ionizing radiation, sulfonation, alkoxylation etc).
5. Final product composition. Selection criteria and calculation rules natural and organic content in the final composition.
6. Special conditions-criteria for production, packaging and storage of certified natural or organic (organic) cosmetics.
7. Environmental criteria and management of raw materials packaging and finished products.
8. Labeling and communication. Compliance rules in accordance with the current EU legal framework and international standards organizations for products certified as natural and organic (organic).
9. Inspections, certification and control of compliance with the rules and principles set must constantly meet to continue bearing the mark as natural or organic products or ingredients.
10. Efficiency and safety of natural-organic cosmetics. Disadvantages of their use and possible side effects, due to the high content of natural ingredients (natural oils, essential oils, etc.). Comparison of effectiveness with conventional "classic" cosmetics.

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face
USE O F INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, communication with students , e-class

TEACHING METHODS

Themannerandmethodsofteachingare described indetail. Lectures,seminars,laboratorypractice,fieldwork,studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	Semester workload
Lectures	60
Educational visits	10
Independent study	20
Course total	90

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	FINAL WRITTEN EXAMINATION (100%): Multiple choice questionnaires, development, characterization as True or False, problem solving, oral examination, written work, public presentation. Criteria are given

5. ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

- Handbook of Cosmetic Science and Technology 4th edition. Edited by Adre O. Barel, Marc Paye, Howard I. Maibach. ISBN 9781842145647.
- Formulating natural cosmetics, by Anthony C. Dweck, 2010
- Naturals and Organics in Cosmetics. Trends and Technology edited by Anthony J. O' Lenick, Jr.
- Sustainable Cosmetic Product Development
- Cosmetics Science and Technology - 2nd Ed, 3 Volumes, by Balsam Sagarin
- Barnes J, Andrson L., Phillipson D. (2002) Herbal Medicines. Pharmaceutical Press, London
- Handbook of Formulating Natural Cosmetics (Dweck Books) by Anthony Dweck
- HAILES, J. The new green consumer guide. London: Simon & Schuster, 2007.
- http://www.ecolabelindex.com/ecolabel/bdih-certified-natural-cosmetics-seal
- http://www.cosmos-standard.org/
- http://www.ecocert.com/
- http://www.icea.bio/
- http://www.usda.gov/
- http://www.soilassociation.org/

-**Related academic journals**: “Natural & Organic Cosmetics”by Eleni Kalogria & Foteini Melliou

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8081	**SEMESTER**	8
COURSE TITLE	PACKAGING OF COSMETIC PRODUCTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CESBC
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/AISTH164/

The aim of the course is for students to understand the basic principles of development, design, compatibility and control study of packaging materials, which are necessary for the creation and production of safe and quality cosmetic products.

The goal of the course is to teach students the different types of materials (using polymer science), which proper cosmetic products will be packaged in them, and to be able to apply their stability and control methods to the final products.

Learning results :

After the end of the course the students will be able to know:

- How to choose (design) the appropriate packaging materials for the respective types of cosmetic products. E.g. baby, sunscreen cosmetics, products for the oral cavity, face, hair etc.
- How to perform the appropriate tests of the stability and compatibility with the product, applying appropriate protocols (methods).
- The methods of control of the packaging materials, upon delivery at the cosmetics factory, in accordance with the Good Manufacturing Practice (GMP) guidelines and the requirements of the National Organization for Medicines.
- The control and evaluation of the final formulations, over time, for the final evaluation of stability (lifetime) of the product.
- How to evaluate, through the appropriate tests (physicochemical, microbiological, testing of packaging materials), the Period After Opening (PAO), which is mandatory to be mentioned on the packaging.

2. LEARNING OUTCOMES

goutcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquirewith thesuccessfulcompletion of thecoursearedescribed.

ConsultAppendixA

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of theEuropean HigherEducation Area

DescriptorsforLevels6,7&8oftheEuropeanQualificationsFrameworkforLifelongLearningand AppendixB GuidelinesforwritingLearningOutcomes

GeneralCompetences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the DiplomaSupplementandappearbelow),atwhichofthe following doesthecourseaim?

Search for, analysis and synthesis of data and information,withtheuseofthenecessarytechnology	ProjectplanningandmanagementRespect for difference and multiculturalismRespectforthenaturalenvironment
Adapting to new situationsDecision-making	Showing social, professional and ethical responsibility andsensitivityto genderissues
Working independentlyTeamwork	Criticismandself-criticism
Working in an international environmentWorking in an interdisciplinary environmentProductionof new researchideas	Productionoffree,creativeandinductivethinking …… Others… …….

Working independently, team work, working in an interdisciplinary environment, working in an international environment

3. SYLLABUS

Lectures

1. General characteristics required for the packaging of cosmetic products.
2. General principles for the design of packaging items.
3. Legislative requirements and quality assurance of cosmetics packaging.
4. Types of packaging materials for cosmetic products (glass, plastics, metals).
5. Polymer chemistry (PE, HDPE, PS, PVC, COEX, PET).
6. Problems when using plastics as packaging materials.
7. Packaging of cosmetic products under pressure.
8. Propellant gases.
9. Corrosion of packaging materials over time and impurities (heavy metals, phthalates, allergens, etc.).
10. Stability-Compatibility testing of packaging materials.
11. Quality control of packaging materials in the production factories.
12. Latest trends - Technologies in packaging (Airless, Bag in Bottle, Bag-on-Valve).
13. Environmental issues.

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning,etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of the learning process through e-class. Communication with students
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** — ***Semester workload*** Lectures — 60 — — Educational visit — 10 Independent study — 20 — — — — — — — — — — Course total — *90*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	**THEORETICAL PART** FINAL WRITTEN EXAMINATION (100%): Multiple choice questionnaires, open-ended questions, characterization of sentences as True or False, problem solving Criteria are given

5. ATTACHED BIBLIOGRAPHY

1. Raut E. and Shikh Z. Packaging of Cosmetics: A Review, J Pharm and Sci Innov 286-293 (2014)
2. Zhang J., Wang X., Gong Z. J Appl Pol Sci, 93 : 1089 (2004)
3. Rawlins EA. Review on pharmaceutical packaging. Bentley's textbook of pharma
4. David F., Sandra P., Tienpont B., et al., The Handbook of Environment Chemistry, Analytical Methods Review, 3Q : p. 9 (Chapter 2), (2003)
5. Napawan Kananuluk (2004). Power of packaging. Bankok Thailand :Love and lift Publisher
6. Ursula Klaschka Dangerous cosmetics - criteria for classification, labelling and packaging (EC 1272/2008) applied to personal care products, Klaschka Environmental Sciences Europe 24:37 (2012)
7. Chetna Sharon1 and Madhuri Sharon. Studies on Biodegradation of Polyethylene terephthalate: A synthetic polymer, J. Microbiol. Biotech. Res. 2: 248-257 (2012)
8. Steven Sonsino : Packaging Design, Van Nostrand Reinhold, New York (1990)
9. FDA(US Food and Drug Administration) Regulation 21 CFR 175.105 Adhesives. US GPO, Washington, DC (2009)
10. T. Mitsui. New Cosmetic Science., Pages 235–247 (1997)

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**80121-80122**	**SEMESTER**	8
COURSE TITLE	Plastic surgery and physical activity		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	3(2+1)	5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESBS
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course learning outcomes is to educate students and familiarize them with the science of Plastic surgery and physical activity.

- Basic knowledge of plastic and aesthetic surgery.
- Basic principles of physical activity and musculoskeletal system.
- Fitness programs.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Independent work
- Teamwork
- Working in an international environment
- Work in an interdisciplinary environment
- Showing social, professional and ethical responsibility and sensitivity to gender issues

3. SYLLABUS

Theoretical Part of the Course:

- Recursion of cosmetic surgery.
- Body and cosmetic surgery.
- Parts of plastic surgery (liposuction, cosmetic surgery, cosmetic facial surgery, lase cosmetic
- Health – Sports.
- The importance and necessity of exercise.
- Effects of physical activity on the musculature.
- Muscle function and control of physical movement.
- Basal metabolism and muscle activity.
- Mental and physical benefits of exercise.
- Muscle function of the upper and lower limps.

Laboratory Part of the Course:

- Orthosomy, exercise structure.
- Structure and function of the upper and lower limps.
- Methods of exercise, applications in various categories of trainees.
- Exercises programs at individual and group level.

- Principles of aerobic exercise.
- Fitness exercises with elastic band and weights, for back, belly fat, abs, shoulders, chest, glutes, legs, triceps, biceps.
- Pilates method, basic exercises.
- Body weight exercises.

4. **TEACHING and LEARNING** METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Teaching laboratory education Communication with students (e-mail, e-class)

TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	LECTURES	30
	LABORATORY	25
	AUTHORSHIP	5
	Course total	60

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	**Theoretical part:** • Multiple-choice questionnaires • True or False **Laboratory part:** • Oral and practical examination (80%) • Preparation of a paper (20%)

5. **ATTACHED** BIBLIOGRAPHY

- Suggested bibliography

Related academic journals:

- Πλαστική επανορθωτική και χειρουργική. Όθων Ν. Παπαδόπουλος 1996. Εκδότης Broken Hill publishers LTD, Εκδόσεις Πασχαλίδης.
- Βασικές αρχές Πλαστικής Χειρουργικής. Ε.Δεμίρης.
- Taschen, A(ΕΠΜ) Aesthetic Surgery, Κολωνία: Taschen 2005.
- Aesthetic Plastic Surgery 2009, Sherrell J. Aston, Douglas S. Steinbrech, Jennifer L. Walden.
- Προπόνηση για ενδυνάμωση και σύσφιξη στις γυαίκες, Frederic Delavier. Επιμέλεια Ελληνικής Έκδοσης Νάτσης Κων/νος – Σκανδαλάκης Παναγιώτης Ιατρικές εκδόσεις Π.Σ Πασχαλίδης.
- Κλινική Ανατομική Ι & ΙΙ Αθήνα, Moore K. (1998) Ιατρικές εκδόσεις Πασχαλίδης.
- Λειτουργική Ανατομική του Ανθρώπου Ι & ΙΙ Αθήνα Μπαλτόπουλος Π. (1994): Ιατρικές Εκδόσεις Πασχαλίδης.
- Γυμναστική – Μια πολύπλευρη προσέγγιση, Κ. Θεοδωράκου (2010) Τελέθριον Αθήνα.
- Φυσιολογία του ανθρώπου, Vander A. Και συνεργάτες (2000), Ιατρικές εκδόσεις Πασχαλίδης.
- Συνοπτική Φυσιολογία του ανθρώπου, Mc Geown JG(2000) , Ιατρικές εκδόσεις Πασχαλίδης.
- Θεμελιώδης αρχές Βιο-Μηχανικής- Ισορροπίας, Κίνηση και Παραμόρφωση, OzKaya N.

Mordin (2003), 2η έκδοση, Επιμέλεια Ελληνικής έκδοσης Μπουντόλος , Ιατρικές εκδόσεις Πασχαλίδης.

- Διατροφή : Ευρωστία, Υγεία και αθλητική επίδοση, Williams M. , Ιατρικές εκδόσεις Πασχαλίδη.

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	Aesthetics and Cosmetic Science		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8031	**SEMESTER**	8
COURSE TITLE	SAFETY EVALUATION OF COSMETIC PRODUCTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CESBC
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/AISTH163/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the basic principles of the safety evaluation of cosmetic products, available to consumers. To be able to estimate the potential toxicological risks before the distribution in the market or to assess the risk (irritations, allergies, phototoxicity, etc.) in the distribution, in order to take any corrective action that may be needed, such as withdrawal or recall of finished products, to ensure public health.

The goal of the course is to teach students the basic principles of toxicity testing of raw materials, packaging materials and finished products. To be able to assess the irritability of chemicals on the skin, through irritation and sensitization testing, as well as the calculation of the Margin of Safety (MoS) for each component, as defined by the European Regulation and the National Organization for Medicines for cosmetics (EC 1223/2009).

Learning results:

After the end of the course the students will be able to know:

- The in vitro and in vivo toxicity tests, applied to a raw material (ingredient) in order to assess its potential risk in the final cosmetic formulation.
- The dermatological tests (Patch test, Repeated Patch test) that must be done, regarding the safety of the final cosmetic product in order to characterize a cosmetic as Non-Irritant or Hypoallergenic.
- How to calculate the Margin of Safety (MoS) for each component.
- To be able to assess the potential toxicity or hazard of impurities of raw materials, packaging materials and final formulations.
- To be able to sign as an assessor the cosmetic product safety assessment, in the technical file, which is required to be prepared by the EU and the National Organization for Medicines, before the product is placed on the market.
- To be able to cooperate with the competent authorities, if required, in order to take into account the risk that may exist and the need for corrective action by the person in charge of the product marketing.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive

Working in an interdisciplinary environment Production of new research ideas	thinking …… Others… …….
Working independently, team work, working in an interdisciplinary environment, working in an international environment	

3. SYLLABUS

Lectures

1. Irritation tests (skin, eye irritation).
2. Phototoxicity tests – Photo-allergy
3. Carcinogenicity - Mutation tests.
4. *In vitro*&*in vivo* study of the absorption of substances from the skin.
5. Foreign impurities, traces, information on raw materials and packaging materials.
6. Exposure to the cosmetic product. The toxicological effects to be considered are also taken into account in calculating the exposure (e.g. exposure may need to be calculated per unit of skin surface area or body weight).
7. Toxicological profile of substances. All significant toxicological pathways of absorption are examined while systemic effects as well as the margin of safety (MoS) are calculated based on the level of no observed adverse effect level (NOAEL).
8. Evaluation of a cosmetic product in true conditions of use.
9. Adverse and serious adverse events.
10. Cosmeto-vigilance
11. Warnings and instructions for use in labeling.
12. Preparation of the safety report. How to submit.
13. Assessment conclusion. Explanation of the scientific reasoning that led to the assessment conclusion.

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of ICT in teaching, Support of learning process through e-class	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	50
	Group independent work presentation	20
	Independent study	20
	Course total	*90*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Multiple choice questionnaires, open-ended questions, characterization of sentences as True or False, problem solving (100%)	

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. http://ec.europa.eu/consumers/cosmetics/cosing/

2.https://www.cosmeticseurope.eu/publications-cosmetics-europe-association/recommendations.html

3.https://www.fda.gov/Cosmetics/GuidanceRegulation/GuidanceDocumens/default.htm

4. http://ec.europa.eu/consumers/sectors/medical-devices/files/meddev/2_7_1rev_3_en.pdf

5.http://ec.europa.eu/health/sites/health/files/files/eudralex/vol-1/dir_2011_62/dir_2011_62_en.pdf

6. https://echa.europa.eu/regulations/biocidal-products-regulation

7.https://circabc.europa.eu/sd/a/51ca9945-167d-411f-9763-92e634af9e1c/Biocides-2002-01%20

8. Manual on Borderline and Classification in the community regulation framework for medical devices Version 1.17 (09-2015)

9. Good Manufacturing Practices for Pharmaceuticals, Sixth edition, Joseph D. Nally.

10. Good Laboratory Practice Regulations, Fourth Edition, Anne Sandy Weinberg.

11. http://toxnet.nlm.nih.gov/cgi

12. http://www.cir-safety.org

13. Lessons of Legislation for Cosmetics and Medical Devices, Papageorgiou S., Mellou F. University of West Attica (2018)

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**80141**	**SEMESTER**	8
COURSE TITLE	THESIS		

INDEPENDENTTEACHINGACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Study and research in collaboration with the supervising professor		20
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESE
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (ENGLISH)
COURSE WEBSITE(URL)	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, student is expected to be able to:

- Describe and document the basic knowledge related to the topic of research
- Summarize the existing scientific knowledge on the subject
- Presentandexplainthebasicprocedures related to thetopicof the research
- Study and analyzetheproblem
- Synthesize and process the survey data
- Writeandsuccessfullysupportwithextensivereference on the subject

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Search, analyze and synthesize data and information, using the necessary technologies
- Independent work
- Working in an interdisciplinary environment
- Promotion of free, creative and inductive thinking
- Production of new research ideas

3. SYLLABUS

The preparation of the Thesis covers the 8th semester of studies of the Program.

The work is individual and has a strong research character, and elements of innovation.

Is supervised by a faculty member of the Department, on a subject chosen by the student with scientific interest.

The student is invited to:

- To know the existing knowledge and know-how, conducting bibliographic research
- Analyze the given problem
- Write and support orally publicly his scientific thought on the subject of the thesis

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face communication of the student with the supervising faculty member.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of specialized simulation software Design andstatistics or digital processing, depending on the needs of the subject.

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Study, bibliography analysis	150
Project – analysis, design, simulation, evaluation	600
Writing the thesis	150
Course total	900

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	• Detailed reference to the research results • Oralpublicsupport,withpresentationofthe research • The evaluation of the thesis, is carried out by three faculty members of the department who have a relevant field of knowledge with the thesis.

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

It is proposed by the supervising faculty member, depending on the topic of the thesis

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**80151**	**SEMESTER**	8
COURSE TITLE	Undergraduate Internship		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Undergraduate Internship	40	10
Study and research in collaboration with the supervising professor		
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESBC
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK/ENGLISH
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/BISC294/ https://moodle.uniwa.gr/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The purpose of the Undergraduate Internship is to connect the education with the professional environment that students will encounter when they complete their studies. Depending on the placement, students after the completion of their Undergraduate Internship will be able to: To know the operation of an Aesthetics Salon or a Multipurpose Aesthetics Center. To have gained significant laboratory experience in a number of procedures and practices of their specialty so that they can work in a similar laboratory or start their own business. To know the procedures of quality analysis and evaluation of cosmetic products if it has been placed in the Cosmetic Industry field. To have gained the experience of cooperation and the ability to deal with actual cases. To gain a sense of responsibility through their first professional experience.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working in an interdisciplinary environment Working independently Team work Demonstration of social, professional and moral responsibility Task planning and management Working in an international environment Promoting free, creative and inductive thinking Adaptation to new situations Respect for diversity and multiculturalism	

3. SYLLABUS

The cognitive fields of practice of the students of the Department are:

Aesthetic treatment or prevention of skin problems (such as acne, photoaging) by an Aesthetician. Non-injectable mesotherapy, photorejuvenation and advanced cosmetic facial electrotherapy for the treatment of scars are new fields of Dermatology. Aesthetic electrotherapy, thalassotherapy and spa therapy, medical camouflage. Research and Development of new cosmetic products. Study of the mechanisms of action of bioactive substances incorporated in cosmetics. Production of cosmetic products on an industrial scale. Quality control (physicochemical methods, instrumental analysis methods, microbiological control, stability tests), of raw materials, final product and packaging materials. Efficiency of the cosmetic products.
Students of the Department of Aesthetics & Cosmetology practice:

- ➢ In individual Aesthetics laboratories
- ➢ In versatile Aesthetic centers
- ➢ In spa centers (day spa - city spa - hotel units)
- ➢ In the theater, cinema and television
- ➢ In factories producing cosmetic products
- ➢ In laboratories for quality control, evaluation and effectiveness of cosmetic products
- ➢ In dermatological clinics and plastic surgery clinics

4. **TEACHING and LEARNING** METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Undergraduate Internship
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Undergraduate Internship

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	***Semester workload***
Practice	350
Presentation of laboratory protocols	50
Final exam	50
Total workload	450

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	The total grade of practice is estimated: 50% from the student's trainee 50% from the student's teacher supervisor

5. **ATTACHED** BIBLIOGRAPHY

9.5 Division of Radiology and Radiotherapy - Courses outline

9.5.1 4th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
SECTION	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	4211-4212	**SEMESTER**	4th
TITLE	**PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS AND PATIENT MANAGEMENT IN THE DEPARTMENT OF MEDICAL IMAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**HOURS/WEEK**	**CREDITS**
Lectures	2	3
Lab	2	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization course	
	-	
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek	
COURSE WEBSITE (URL)	https://eclass.teiath.gr/courses/RADAKT105/ http://opencourses.gr/opencourse.xhtml?id=17629&ln=el	

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A* • *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* • *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*
PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS Upon successful completion of the course, the student will: **A.** … understand: 1. how individual human values affect patient care, 2. the effect cultural divergence has on patient care and management, 3. the communication skills' requirements during radiographic examinations. **B.** …. know

1. patient management (within X-ray departments) principles
2. how to accurately report an accident
3. how to evaluate the patient's condition
4. the normal values for basic laboratory examinations
5. how to identify the clinical symptoms of emergency situations
6. the basic principles of injured patients' handling.
7. basic principles of pharmacology and drug administration
8. how to prepare for contrast administration procedures
9. the basic chemical properties of contrast agents

The aim of the course is to present and describe the basic techniques and skills required in order to provide individual patient-oriented care, depending on the type of examination and the requirements imposed by the clinical situation

Aim of the course: The student should develop the skills for high-quality patient management (patient positioning and handling under emergency conditions, evaluation of the clinical situation, constraint of the conditions that result in spread of infections).

Aim of the clinical placement: The student should get accustomed with the hospital environment and the requirements imposed by the rules/instructions regulating the working behavior in a hospital.

HEALTH CARE MANAGEMENT

Following completion of the course, the student should have the knowledge of health care management principles so that they can adapt to the special requirements of a patients' oriented working environment.

Aims of the course include:

1. development of skills to manage units within a hospital environment and capabilities required for critical assessment of systems employed in the patient care and management sector.
2. management of the budget of X-ray departments.
3. organization of departmental infrastructure supporting the aims set by the department.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Individual assignments
- Group assignments
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. COURSE SYLLABUS

The course syllabus is common for both the theoretical and the laboratory sections and cover the following:

PRINCIPLES OF ADMINISTRATION OF HEALTH UNITS

1) Communication with patient and assessment of the clinical situation
2) Patient positioning with care.
3) Control of infection
4) Handling of emrgencysituations.
5) Vital parts and oxygen supply, monitoring through electro- cardiogram
6) Trauma and X-ray imaging.
7) Paediatric radiographic imaging.
8) Radiographic imaging of the elderly patients.
9) Patient care in examination of the urinary system.
10) Patient care in examination of the gastrointestinal system.
11) Basic pharmacology for radiology-radiotherapy technologists.
12) Contrast media/agents and how they interact with human body.

HEALTH CARE MANAGEMENT

1) Basic principles of organization and management within the heal care sector.
2) Organizational structure of heal care units and the interaction between different sections and departments.
3) Measures to prevent work-related accidents, to promote hygiene and safety conditions in health care.
4) Basic principles of finance and in/out-patients admission.
5) Basic principles of supply chain application within a heal care system.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Theoretical lessons are carried out in the classroom. Lab work is carried out in the section's X-ray rooms.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and the use of e-mail and the website of the Department for communication and information of students respectively. Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning*	

Activities	***Semester workload***
Lectures	30
Laboratory work	30
Study and bibliography	20
Individual study	70
Course total	**150**

activity are given as well as the hours of non directed study according to the principles of the ECTS	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory** Written final exam (100%) that includes: • Development Questions • Multiple Choice Test • Short Answer Questions **Lab** Written and oral examination.

5. RECOMMENDED BIBLIOGRAPHY

Greek

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Radgmagazine. www.radmagazine.co.uk
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Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/

COURSE OUTLINE

1. **GENERAL**

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
DEPARTMENT	**BIOMEDICAL SCIENCES**		
SECTION	**RADIOLOGY AND RADIOTHERAPY**		
LEVEL OF STUDIES	**UNDERGRADUATE**		
COURSE CODE	**4221-4222**	**SEMESTER**	**4th**
TITLE	**RADIOLOGY I**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**HOURS/WEEK**	**CREDITS**
Lectures		4	16
Lab		12	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization course		
	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
COURSE WEBSITE (URL)	https://eclass.teiath.gr/courses		

2. **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

Upon successful completion of the course the student will have:

1. Knowledge of the X-ray beam generation process in the medical X-ray tube and the parameters (kVp, ma, s) affecting the quality of the X-ray beam.
2. Knowledge of the X-ray beam properties and how the beam interacts with matter.
3. Knowledge of patient positioning, relative to the X-ray tube and the detector plate, ability so select the radiological parameters (kVp, mAs) depending on the subject under investigation, and knowledge of the diagnostic criteria each radiograph should meet.
4. Knowledge and application of the radiation protection principles related to each radiographic/radiological technique.
5. Understanding of the basic image quality criteria that should be met in each radiographic procedure.

6. Understanding of the basics of digital imaging and especially its application in medical diagnosis.
7. Knowledge to perform basic radiographs of the thoracic cavity and head.

Aim and objectives of the course: The aims of the course include the analysis of the x-ray image generation process, the study and analysis of the radiographic image properties, the study of the basic radiation protection theory, the introduction of the students to the X-ray department, the basic radiographic imaging of the thoracic cavity.
The procedures and parameters affecting the diagnostic quality of the generated X-ray radiographs are discussed in both theoretical classes and laboratory sessions so that the student understands the significance of the geometrical and exposure parameters with respect to the radiographic image quality.
The radiological anatomy of the thoracic cavity and the skull are studied through analysis of the radiographic projections employed for radiological diagnosis, focusing on the image quality criteria that should be met to ensure accurate diagnosis.

General Competences
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Individual assignments
- Group assignments
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. COURSE SYLLABUS

The course syllabus is common for both the theoretical and the laboratory sections and cover the following:

1. Production of medical X-ray beams.
2. Interaction of X-rays with matter.
3. Anti-scatter grid
4. Radiographic image quality. Geometrical parameters.
5. Exposure factors and Automatic Exposure Control (AEC).
6. Digital imaging I.
7. Digital Imaging II.
8. Respiratory system: Basic radiographic projections.
9. Radiographic imaging of the thoracic cavity bones.

10. Skull: Basic radiographic projections I
11. Skull: Basic radiographic projections II

Clinical placement
Clinical placement is carried out in X-ray departments of hospitals across Attica.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Theoretical lessons are carried out in the classroom. Lab work is carried out in the sector's X-ray rooms.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and the use of e-mail and the website of the Department for communication and information of students respectively. Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	***Activities*** / ***Semester workload*** Lectures: 46 Laboratory work: 200 Individual study: 114 ***Course total***: **360**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory** Written final exam (100%) that includes: • Development Questions • Multiple Choice Test • Short Answer Questions **Lab** Written and oral examination.

5. RECOMMENDED BIBLIOGRAPHY

Greek

1) Κουμαριανός Δ.Α.***Άτλας Ακτινολογικών Προβολών – Βασικές προβολές***. Δ. Κουμαριανός, 1999. ISBN 960-344-016-17
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3) Δ. Αλειφερόπουλος. ***Θώρακας - καρδιά για τεχνολόγους – ακτινολόγους***. εκδ. ΣΤΑΜΟΥΛΗΣ, 1996, ISBN 960-351-079-3
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Radgmagazine. *www.radmagazine.co.uk*
Radiographics*, https://pubs.rsna.org/journal/radiographics*
Radiology. *https://pubs.rsna.org/journal/radiology*
The Radiology Assistant*. https://radiologyassistant.nl/*

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	4231	**SEMESTER**	4th
COURSE TITLE	**RADIOLOGY MEDICAL PHYSICS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	5

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

ConsultAppendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

The course aims to present and analyze the processes involved in the making of the X-ray image. It also aims at the illustration and the study of qualitative characteristics of X-ray image. Students should be able to display knowledge and comprehension of the basic science topics. More specifically, they should:

- Describe the interactions of radiation with matter.
- Analyze how the x-ray tube produces radiation and how the X-ray beam is affected by the exposure parameters (KV, mA, sec, filter, generator) selected in the control console.
- Describe and understand the technological advances in equipment (generators) used in diagnostic radiology.
- Understand the creation of x-ray images, the quality characteristics of radiological

image and the contribution of parameters involved in imaging.

The course objective is to link the theoretical background knowledge with the knowledge of parameters that can be adjusted in order to improve imaging.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for, analysis and synthesis of data and information,with the use of the necessary technology
- Adapting to new situationsDecision-making
- Working independentlyor Teamworking
- Working in an international environment
- Working in an interdisciplinary environment

3. SYLLABUS

1. Structure of matter, nature of radiation, radiation-matter interaction, dose, dosimetry.
2. X-ray generators, principles of operation (fixed and mobile).
3. X-ray tubes, high voltage generator, rectification, x-ray production, x-ray spectrum, x-ray spatial distribution, heat tolerance charts.
4. X-ray tube voltage and current, x-ray tube exposure rate, filter use, control room, focal spot size, collimators, antiscatter bucky, automatic exposure control systems.
5. Fluoroscopy, image intensifier, image recording.
6. Technology of angiographic systems - Portable systems with image intensifier C-arm.
7. Characteristics of radiodiagnostic image, characteristics of x-ray fluoroscopic image, characteristics of digital image.
8. Dosimetry of radiographic systems, Air Kerma, effective dose.
9. Technology of Computed Radiography (CR) and Direct Radiography (DR).
10. Principles and technology of Mammography.
11. Principles and technology of Computer Tomography.
12. Technology of Magnetic Resonance Imaging.
13. Technology of Nuclear Medicine Systems. PET/PET-CT/PET-MRI
14. Technology of dental radiographic systems
15. Operation of bone densitometry systems.
16. Legislation- quality assurance-phantoms.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>Face to face in the classroom</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication, uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>60</td></tr><tr><td>Self –Study, Essay</td><td>30</td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Final written evaluation on 5 topics

Alternatively written final evaluation with a weighting factor of 0,7 and participation in a working group that will present the work in an audience, with a weighting factor of 0,3.

In this way the cooperation between the students is promoted.</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

1. Κανδαράκης Ι. ***Ιατρική Φυσική-Βιοϊατρική Τεχνολογία: Ακτινοδιαγνωστική.***Πανεπιστημιακές Εκδόσεις "Αράκυνθος", έκδοση 2008, σελίδες 352, ISBN: 978-960-89768-1-8.
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-Related academic journals:

1) *Physics in Medicine and Biology LINK*
2) *Medical Physics LINK*
3) International Journal of Radiation Oncology, Biology, Physics *LINK*

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	4241	**SEMESTER**	4th
COURSE TITLE	**HYGIENE AND EPIDEMIOLOGY – PUBLIC HEALTH**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	4
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SBC/C SPECIAL BACKGROUND COURSE / COMPULSORY	
Prerequisite Courses	NO	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

At the end of the course the student will have:

- developed an understanding of 'Health and Work' issues.
- managed to appreciate how the staff health is affected by natural, chemical, biological and ergonomic factors as well as the rules that govern safety at work
- become familiar with the basic principles of epidemiology and of how they are applied in clinical practice
- understand the several types of epidemiologic studies would have gained a wide spectrum of skills during the course.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility*

- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*

andsensitivity to gender issues

- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team working
- Working in an international environment

3. SYLLABUS

Historical review. Aims, methods and uses of Epidemiology and Hygiene. The modern aspects of Epidemiologic data. Study of epidemiologic characteristics. Prospective and retrospective research. Epidemiologic approach of preventive interventions. Clinical Epidemiology and Epidemiology of Work.

1. Essential terminology of Hygiene and Epidemiology. Definitions of Health and illness. Historical review. Aims and uses, Etiology and classification in Epidemiology. Sources of data (population censuses, natural movement of population, morbidity statistics, reporting illnesses, mortality statistics, statistics of nursing institutions, coding of diseases).
2. Morbidity and mortality indices. Descriptive Epidemiology. Characteristics of people, place, time. Prospective research. Retrospective research.
3. Clinical Epidemiology. Screening. Evaluation of Therapeutic measures. Epidemiological methods and Health Services. Epidemiologic approach of preventive interventions.
4. Epidemiology of nosocomial infectious diseases. Health protection services for Workers in the Health Sector.
5. Monitoring of infectious diseases. Investigation of endemic and epidemic Hospital Infections. Applications of Epidemiology in the Community Hospitals.
6. Preventive Measures and Isolation of Patients. Multidrug-resistant pathogens control measures.
7. The inanimate environment. Logistics-technical infrastructure.

8. Prevention of food poisoning in Hospitals
9. Infections transmitted in the Clinical Laboratory. Infections caused by Endovascular fluid administration. Infections associated with invasive treatments.
10. Consequences and Characteristics of Endemic and Epidemic Hospital Infections.
11. Epidemiology of infectious diseases (Pneumonia, AIDS, Flu, tuberculosis and modern infectious diseases, Gastroenteritis, Staphylococci and Streptococci of Group A, viruses that cause Hospital Infections).
12. Hygiene at work.
13. Risk assessment at work.
14. Epidemiology at work.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>Face to face in the classroom</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication, uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
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The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Self –Study, Essay</td><td>75</td></tr><tr><td>Course total</td><td>120</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation,</td><td>Final written evaluation

Essay questions</td></tr>
</table>

other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	

5. RECOMMENDED BIBLIOGRAPHY

GREEK

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3. Τριχόπουλος Δ. ***Γενική & κλινική επιδημιολογία***. Επιστημονικές Εκδόσεις Παρισιάνου Α.Ε./2002 ISBN: 960-394-117-4

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5. Polgar S. and Thomas S.A. ***Introduction to Research in the Health Sciences.*** Churchill Livingstone, 2000. ISBN 0-443-05039

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	4251	**SEMESTER**	4th
COURSE TITLE	**BIOETHICS AND PROFESSIONAL DEONTOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	4

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SBC/C SPECIAL BACKGROUND COURSE / COMPULSORY
PREREQUISITE COURSES	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

At the end of the course the student will be able to:

- Apply the rules of professional deontology
- Understand the role of deontology in the quality assurance of health services
- Differentiate between offering patient support and getting emotionally involved
- Appreciate honesty, integrity, behaving responsibly, scientific adequacy and motivation as deontological duties of health workers
- Show professional appraisal
- Deal with ethical dilemmas
- Deal with medical and legal issues of professional incompetence
- Articulate the rights of the patient
- Get patient consent to medical procedure
- Have adequate knowledge of research and deontology - bioethics

The course aims for the student to develop a critical approach to the basic ethical and deontologic dimensions of the practice of medicine and the deontological dilemmas encountered during professional practice.

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for, analysis and synthesis of data and information,with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Teamworking
- Working in an international environment

3. SYLLABUS

1. Definitions. Distinctions and differences between similar concepts. Historic review
2. Patient rights
3. Basic principles of deontology and bioethics
4. Legislation – Relevant terminology – Procedures of legal claims
5. Protection of patients' rights
6. The General Data Protection Regulation (GDPR)
7. Application of the rules of deontology and good practices in health services in order to improve efficiency
8. Cultural and financial parameters in the implementation of the deontology rules
9. The obligation to inform the patient and obtain consent for the medical procedures
10. Issues of ethics and deontology in medicine and specifically in clinical research
11. Special issues in professional ethics, deontology and bioethics
12. Advances in technology and its management in diagnosis and treatment by the health professionals – technologists
13. Professional rights and duties of the radiologic technologist during professional practice
14. Behavioral issues towards the health service users, colleagues and other health professionals

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication, uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..

TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final written evaluation Essay questions

Activity	*Semester workload*
Lectures-Presentations using audiovisual media.	45
Self –Study, Essay	75
Course total	**120**

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Πουλής, Ε. Βλάχου. ***Βιοηθική Δεοντολογία και Νομοθεσία στις Επιστήμες Υγείας***. ΕκδόσειςΚωνσταντάρας, 2016, ***ISBN:*** 9789606802959
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9. Σαρρής Μάρκος, (2001), ***Κοινωνιολογία της Υγείας και Ποιότητα Ζωής***. εκδ. Παπαζήση
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11. Κώδικες δεοντολογίας
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9.5.2 5th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	5221	**SEMESTER**	5th
COURSE TITLE	**SECTIONAL ANATOMY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	2	4

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATON COURSE / COMPULSORY
PREREQUISITE COURSES	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/cources/BISC171

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

On successful completion of the course, students will be able to:

- move proficiently from body anatomy to sectional anatomy
- recognize and produce the normal anatomy of the body at multiple levels
- recognize and reproduce the normal anatomy of the body with different imaging methods

The aim of the subject is for the students to understand the 3-dimentional anatomy of the human body that is necessary in order to produce images of the human body using tomographic modalities. Knowing in depth the sectional anatomy the prospective radiologic technologist will be able to recognize structures and produce through post processing the appropriate information.

The course presents the sectional anatomy in multiple levels and with several modalities (US, CT, MRI and NM). The student will be able to produce a section at any level and isolate a structure from different sections.

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

— *Search for analysis, synthesis of data information with the use of the necessary technology* — *Adapting to new situations* — *Decision-making* — *Working independently* — *Team work* — *Working in an international environment* — *Working in an interdisciplinary environment new research ideas*	— *Project planning and management* — *Respect for difference and multiculturalism* — *Showing social, professional and ethical responsibility andsensitivity to gender issues* — *Criticism and self-criticism* — *Production of free, creative and inductive thinking*

- Search for, analysis and synthesis of data and information,with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently

3. SYLLABUS

1. Introduction to the basics - Terminology
2. Basic features of the images from different imaging modalities – US, CT, MRI
3. Sectional anatomy of the thorax
4. Sectional anatomy of the upper abdomen
5. Sectional anatomy of the lower abdomen (male / female)
6. Sectional anatomy of the brain
7. Sectional anatomy of the facial bones, petrous bone
8. Sectional anatomy of the spine, neck
9. Sectional anatomy of the upper limb
10. Sectional anatomy of the lower limb
11. Sectional Anatomy of the vascular system
12. Cardiac Sectional Anatomy
13. Sectional anatomy in Nuclear medicine

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication, uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..

TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity*	*Semester workload*
	Lectures-Presentations using audiovisual media.	30
	Self –Study, Essay and presentation	90
	Course total	**120**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final written evaluation Anatomy on sections (80%) Short-answer questions (20%)	

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1. Eustace S, Mc Nicholas M, Ryan S. ***Απεικονιστική Ανατομική***. Ι. Κωνσταντάρας 2013, ISBN 9789606802515

2. J. Weir, P.H. Abrahams.***Απεικονιστική ανατομία του Ανθρώπου.***Π.Χ. Πασχαλίδης, 2002, ISBN 960-399-0284

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10. Kelley LL, Peterson CM. ***Sectional Anatomy for Imaging Professionals*** 2nd ed. St. Louis, Mo:Mosby; 2007ISBN -13 978-0-323-02003-9 and ISBN 0-323-02003-8

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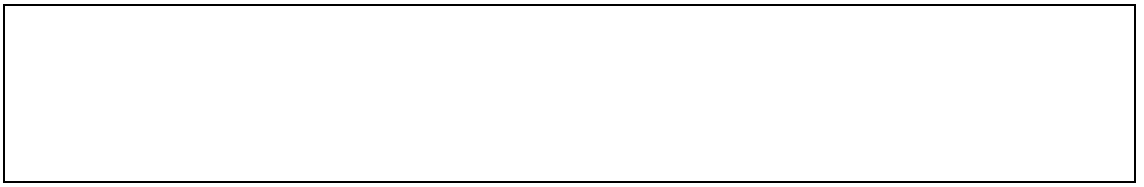

COURSE OUTLINE

1. GENERAL

SCHOOL	Health and Care Sciences		
ACADEMIC UNIT	Biomedical Sciences		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	5231-5232	**SEMESTER**	5th
COURSE TITLE	**RADIOLOGY II**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	5	12
Laboratory	8	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/ C Specialization course / Compulsory
Prerequisite Courses	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://bisc.uniwa.gr/courses/BISC283

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

THEORY

The student acquires the knowledge and skills necessary to produce diagnostic images under variable circumstances. Emphasis is laid upon the integration of theoretical and technical knowledge through Undergraduate Internship.

Upon successful completion of the course the student will:

- Recognize the anatomy and radiologic anatomy on the images
- Be able to evaluate the images obtained as regards positioning of the patient, alignment, satisfactory demonstration of the expected anatomy and quality
- Able to use alternative projections in order to demonstrate pathology depending on the patient's clinical problem and condition
- able to recognize gross pathology on images

LABORATORY /CLINICAL PLACEMENT

The student will be able to perform all X-ray projections described below. He will know how to:

- Confirm patient identity
- Confirm type of projection required
- Take short history
- Check for pregnancy
- Patient preparation
- Positioning / centering
- Apply radiation protection rules
- Recognize and assess image produced
- Indications for a particular projection
- know the criteria of correct technique
- Radiologic Anatomy
- Technical parameters (exposure factors, use of antiscatter device, focal spot size, intensifying screens, development and processing of the image)

The aim of the course is to analyze the stages of the image production, the quality assessment of a radiograph, introduction to radiation protection, familiarization with the Imaging Department and the technique of projectional radiography.

The student to know all Xray projections can recognize anatomy and findings and gross abnormalities on X-ray images.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Self work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

THEORY

Presentation of the technique and assessment of the images produced. Alternative techniques depending on the patient's problem and clinical condition.

The main clinical problems per body system are also presented:

1. Bone fractures
2. Bone and joint infections
3. Joint diseases
4. Bone tumors
5. Mediastinum diseases
6. Lung diseases
7. Chest trauma
8. Pleura radioanatomy and diseases
9. Cardiac radioanatomy and diseases
10. Acute abdomen

LABORATORY

Focus on projectional technique, quality assessment of the image produced and radiolodic anatomy of the routine x-ray projections per body areas

1) Upper limb: Basic projections
2) Upper limb: Special projections
3) Shoulder girdle: Basic Projections.
4) Shoulder girdle: Special projections
5) Lower limb: Basic projections
6) Lower limb: Special projections
7) Pelvis: Basic projections
8) Pelvis: Special projections
9) Spine: Basic projections I
10) Spine: Basic projections II
11) Spine: Basic projections III
12) Spine: Special projections
13) Abdomen: Basic projections

HOSPITAL PLACEMENT

Clinical practice in large general hospitals. Participation and familiarity with radiological examinations performed in conventional X-ray units, with or without the use of contrast media. The student gets to use X-Ray equipment, sees preparation of patient for contrast use, the use of radiation protection devices and irradiation of the patient.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	In the classroom face to face and in the laboratory and hospital	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc.	
TEACHING METHODS	*Activity*	*Semester workload*

The manner and methods of teaching are described in detail. *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	Lectures-Presentations using audiovisual media. 75 Laboratory 60 Hospital Placement 60 Self -Study 165 Course total **360**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%) that includes: – Essay Questions – Multiple Choice Questions – Short Answer Questions Laboratory / Hospital Placement Oral and written examination (multiple choice questions)

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης, Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6
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11. Frank ED., Long, BW, Smith, BJ. ***Merrill's Pocket Guide to Radiography.*** 6th ed. St. Louis, Mo:Mosby; 2007.ISBN: 032304209012.
12. Frank ED, Long, BW, Smith, BJ. ***Mosby's Radiography Online: Anatomy and Positioning for Merrill's Atlas of Radiographic Positioning & Procedures.*** 11th ed. St. Louis, Mo: Mosby; 2007.ISBN-10: 0323044921 and ISBN-13: 978-032304492913.
13. Frank ED, Long, BW, Smith, BJ, Hall Rollins, J. ***Workbook for Merrill's Atlas of Radiographic Positions & Radiologic Procedures.*** 11th ed. St. Louis, Mo: Mosby; 2007.ISBN: 032304216314.
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15. Hagler ***The Pocket RAD TECH***. W. B. Saunders Co. 1993

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radgmagazine. www.radmagazine.co.uk
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/

COURSE OUTLINE

1.GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	5241	**SEMESTER**	5th
COURSE TITLE	**INTRODUCTION TO COMPUTED TOMOGRAPHY – DIGITAL IMAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	6
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C Specialization Course/Compulsory	
	-	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
COURSE WEBSITE (URL)	https://bisc.uniwa.gr/	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

Upon successful completion of the course the student will be able to:

- Describe the basic structural elements of Computed Tomography equipment and the differences between systems. Image processing, raw data, image data, algorithms, technical artifacts
- Know specifically the radiation protection principles in Computed Tomography
- Perform the routine examinations of brain, thorax, abdomen and all other anatomic regions and be familiar with the gross abnormalities in order to apply the appropriate techniques for the best visualization of pathology (measurements, analysis)
- Become familiar with Image analysis, Correlation with the final result
- Recognize the factors of image degradation of digital images
- Use of PACS systems, components and function
- Use DICOM images, transferred via PACS, know the medical archive of patient
- Know about safety issues in information technology
- Tell the difference between simple and diagnostic monitors

Aim and objectives of the course: The aim of the course is to present the student with:
the modality of Computed Tomography and the developments of the technique.
the indications and protocol design of the various anatomical regions.
the necessary practical steps of using and optimizing the protocols that will demonstrate diagnostically of each examined area and the particularities of each patient.
the techniques of digital image processing in modern computing systems, comparison of analogue and digital imaging quality assessment of CR and DR images.
Quality assessment of imaging systems.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adapting to new situations
- Self-work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

1. Introduction to Computed Tomography – Physical Principles - Equipment
2. Helical and Multisclice Computed Tomography
3. Method of examination, image reconstruction and image quality
4. Image Processing and reading ways
5. CT of brain, neck and spine
6. CT of thorax and abdomen
7. CT of upper extremity and shoulder
8. CT of lower extremity and pelvis
9. CT of sinus and orbits
10. Analog to digital converters, sampling, remote use of medical modalities, CAD systems, organization of medical information with computers for the management of information in departments of Radiology, CT, MRI, Nuclear Medicine, DSA, P.A.C.S.
11. Properties of medical images and evaluation parameters (DQE, MTF, SNR, CNR, noise levels and types, spatial resolution, histograms of gray scale, WW,WL)
12. Artifacts in digital images, acceptable images, save, compression and recovery of digital images.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>In the classroom</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Power point presentations

e - class</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>150</td></tr><tr><td>Course total</td><td>150</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final exam(100%) that includes:
– Essay Questions
– Multiple Choice Questions
– Short Answer Questions</td></tr>
</table>

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Προυκάκης Χ. ***Εισαγωγή στην Ιατρική Φυσική και Τηλεϊατρική***. Παρισιάνου Α.Ε. 2004
2. Λαγούβαρδος Π. ***Οδοντιατρική πληροφορική***. Ιατρικές εκδόσεις Λίτσας, 2006
3. Αλειφερόπουλος Δ. ***Αξονική Τομογραφία***. Λίτσας, 2003. ISBN:906-372-073-9
4. Hofer M. ***Διδακτικό Εγχειρίδιο Υπολογιστικής Τομογραφίας***. Παρισιάνου Α.Ε., 2004 ISBN: 960-394-265-0
5. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης, Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεουλίδης***. ΚλινικήΑκτινολογία***. Εκδόσειςl. Κωνσταντάρας, 2012, ISBN 960-680-238-6

ENGLISH

6. Hader D.P. ***Image Analysis: Methods and Applications*** (2nd edition), CRC Pres 2001, ISBN 0-84-930239-0
7. Dreyer KJ, Mehta A, Thrall JH. PACS – ***A Guide to the Digital Revolution***. New York: Springer; 2002. ISBN 0387952918
8. Huang, HK. ***PACS and Imaging Informatics***. 2nd ed. Hoboken, NJ: Wiley-Liss; 2004. ISBN 0471251232
9. Oakley J. ***Digital Imaging: A Primer for Radiographers, Radiologists and Health Care Professionals***. NY: Cambridge University Press; 2003. ISBN 9780521866194
10. Reiner BI, Siegel EL, Carrino JA. ***Quality Assurance: Meeting the Challenge in the Digital Medical Enterprise.*** Society for Computer Applications in Radiology (SCAR); 2002, ISBN 0970669321
11. Euclid Seeram. ***Computed tomography: physical principles, clinical applications, and quality control***. 3rd ed, 2009, Saunders ISBN 978-1-4160- 2895-6
12. Reiser, M.F.; Becker, C.R.; Nikolaou, K.; Glazer, G. (Eds.). ***Multislice CT***. 3rd ed. 2009 ISBN 978-3-540-33125-4
13. Mathias Prokop, Michael Galanski, Aart Van Der Molen, Cornelia Schaefer-Prokop. ***Spiral and Multislice Computed Tomography of the Body***. Thieme, 2003. ISBN:0865778701 14)
14. AAPM –American Association of Physicists in Medicine (2010). ***Comprehensive Methodology for the Evaluation of Radiation Dose in X-ray Computed Tomography.*** ReportNo. 111

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. **GENERAL**

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	5251-5252	**SEMESTER**	5th
COURSE TITLE	**RADIOTHERAPY MEDICAL PHYSICS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	5	8
Laboratory	2	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/ C Special background course / Compulsory
Prerequisite Courses	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://bisc.uniwa.gr/courses/BISC264

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

ConsultAppendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

Students should be able to display knowledge and comprehension of the basic science topics underpinning all aspects of radiotherapy preparation and delivery and patient support. Radiotherapy physics is a core 'link' of the overall 'chain' of radiotherapy practice. Students should be familiar with radiotherapy physics (related to photon, electron and proton therapy) for Tele- and Brachy-therapy, radiotherapy dosimetry and Quality Assurance concepts. They should also be familiar with the standard as long with the modern and often complex radiotherapy techniques

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment*
  new research ideas

- Search for, analysis and synthesis of data and information,with the use of the necessary technology
- Adapting to new situations Decision-making
- Working independently Teamwork
- Working in an international environment
- Working in an interdisciplinary environment

3. SYLLABUS

THEORY

1. Ionizing radiation physics. Photons and charged particles interaction with matter. Dosimetric quantities
2. Dosimeteres in radiation oncology. Ion chambers. Film dosimetry.Absolute and relative dosimetry in radiation oncology.
3. Linear Accelerators. Photon and Electron beams
4. Inverse square law, Percentage Depth Dose, Beam profiles, Output Factors, Calibration Factor, Wedge Factor
5. Gross Tumor Volume, Clinical Target Volume, Planning Target Volume
6. Treatment Planning Systems. Photon, Electron, Proton beam treatment planning principles
7. Tumor Control Probability, Normal Tissue Complication Probability, Fractionation
8. Radiotherapy techniques. Basic principles. 3D-CRT, IMRT, VMAT, SRS/SRT
9. Image Guided Radiotherapy and Surface Guided Radiotherapy principles
10. Proton Therapy – Basic physics and principles
11. Brachytherapy – Basic physics principles (Superficial, Interstitial, Intracavitary, HDR brachytherapy, Permanent implants for prostate brachytherapy)
12. Quality Assurance in Radiotherapy
13. Modern radiotherapy techniques – Basic principles (MR-LINAC RT, Single isocentric multi-focal SRS, FLASH radiotherapy)

LABORATORY

1. Dicom and Dicom-RT files and viewers. RadiAnt and SlicerRT
2. Treatment Planning Systems – basic characteristics
3. Isodose lines – Dose Volume Histograms
4. 3D-CRT Breast Treatment Plans
5. 3D-CRT Prostate Treatment Plans
6. 3D-CRT Lung Treatment Plans
7. 3D-CRT Brain Treatment Plans

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	In the classroom face to face and in the laboratory

Face-to-face, Distance learning, etc	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 75 Laboratory — 30 Self -Study — 105 Course total — **210**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theoretical and Lab part Written exams and Lab essay

5. **RECOMMENDED** BIBLIOGRAPHY

1) *'**Radiation Oncology Physics: A handbook for teachers and students**" IAEA publication. LINK*
2) "***Practical Radiotherapy Physics and Equipment***." Cherry P & Duxbury A., GMM Ltd., ISBN 1900151065

-Related academic journals:

3) *Physics in Medicine and Biology LINK*
4) Medical Physics *LINK*
5) Radiotherapy and Oncology *LINK*
6) International Journal of Radiation Oncology, Biology, Physics *LINK*

9.5.3 6th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6211-6212	**SEMESTER**	6th
COURSE TITLE	**RADIOBIOLOGY – RADIATION ONCOLOGY I**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	6
LABORATORY	2	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC215/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

On completion of the course the student will be able to:

- Know the effect of ionizing radiation on tissues (normal and abnormal)
- Know in depth the effects of ionizing radiations on the patient
- Use responsibly radiations on patients as professional in imaging, nuclear medicine or radiation therapy

The student will be able to:

- Know about radiation treatment equipment
- Know about the principles of radiation oncology
- Know about the applications of radiation treatment

The aim of the course is for the student to know about the ways and the routes of tumor spread and how to best apply the treatment for patient relief or cure.

Laboratory
The course aims to promote understanding, application skills and familiarity with radiation treatment planning. During this process students will get better understanding of radiation oncology and their responsibilities and duties in the Departments of Radiotherapy.
The aim of the course is also to improve insight of clinical radiation oncology and be able to participate in radiation treatment planning (simulation) and treatment sessions as well as address the particularities of oncology patients.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Criticism and self-criticism
- Production of free, creative and inductive thinking

3. SYLLABUS

THEORY (part I)

1. The properties of ionizing radiation and interactions with matter
2. Chemical changes related to the absorption of ionizing radiation
3. Radiation dose and dose distribution in biological materials
4. Effect of radiation at molecular and submolecular level
5. Effect of radiation on cells and cell survival curve
6. Radiation sensitivity at the different phases of the cell cycle.
7. In vivo survival of cells after irradiation
8. The effects of radiation at tissue level (skin, mucosa, glands, thyroid, haemopoietic, neural tissue, lungs, kidneys, fetus, reproductive system)
9. Genetic effects of radiation
10. Modification factors of the biological effects of radiation
11. Radiation and cancer

THEORY (part II)

1. Tumors of the CNS. (introduction, epidemiology, etiopathogenesis, pathological classification - primary CNS tumors, metastatic tumours of the central nervous system - diagnosis, clinical presentation, symptomatology, prognosis, treatment of tumors of the CNS)
2. CNS tumors: radiotherapy techniques (localized radiation therapy, wholebrain radiotherapy, CNS radiotherapy), radiotherapy side effects (acute, intermediate, longer term). Gliomas, pituitary adenoma, craniopharyngioma, pineal tumors, meningiomas, Chordoma, spinal cord tumours (clinical picture, diagnosis, prognostic factors). Radiotherapy results. The role of radiotherapy in the treatment of brain metastases.
3. Spinal cord compression, the role of radiotherapy in cancerous meningitis. Modern approaches to treatment of CNS tumors: three-dimensional conformal radiotherapy, stereotactic radiotherapy -stereotactic radiosurgery (gamma knife) interstitial placement of radioactive isotopes, chemotherapy of CNS tumors.
4. Malignant neoplasms of the head and neck: istopathologoanatomical classification (mandible, nasal cavity and paranasal sinuses, nasopharynx, oral cavity, tonsils, salivary glands, larynx, thyroid gland). Head and neck cancer – unusual locations: ear cancer, cancer of the nasal turbinates, cancer of the nasal cavity, paranasal sinus cancer. Treatment of cancer at usual locations.
5. Cancer of the nasopharynx: anatomy, epidemiology and etiopathogenesis, natural history and staging, symptoms and diagnosis, prognostic factors, treatment of nasopharynx cancer, the radiotherapy techniques in nasopharynx CA, treatment side effects.
6. Cancer of the oral cavity: anatomy, epidemiology and etiopathogenesis, natural history - Extension - staging, symptoms and diagnosis, general treatment approach, radiotherapy technique, radiotherapy side effects.
7. Cancer of the oropharynx: general anatomy, epidemiology and etiopathogenesis, natural history and staging, treatment, radiotherapy technique.
8. Cancer of the base of tongue: anatomy, epidemiology and etiopathogenesis, natural history and staging, treatment, radiotherapy technique, side effects of treatment.
9. Cancer of the larynx: introduction, anatomy, epidemiology and etiopathogenesis, natural history and staging, symptoms and diagnosis, treatment of cancer of the larynx, radiotherapy technique, side effects of treatment.
10. Cancer of the hypopharynx: anatomy, epidemiology and pathogenesis, natural history and staging, symptoms and diagnosis, treatment, side effects of treatment.
11. Cancer of the major salivary glands: parotid, submandibular salivary gland, sublingual salivary gland. Epidemiology, natural history and staging, symptoms and diagnosis, treatment, radiotherapy technique, side effects of treatment.
12. Thyroid cancer: general anatomy, epidemiology and etiopathogenesis, natural history and staging, symptoms and diagnosis, treatment, radiotherapy technique, side effects of treatment.
13. Lung Cancer: general (epidemiology, etiopathogenesis, clinical presentation, diagnosis, staging, istopathologoanatomical classification, prognostic factors)
14. Small cell lung carcinoma: general, radiation therapy, the role of prophylactic brain irradiation. Non-small cell lung carcinoma: radiotherapy treatment, chemotherapy, surgery.

LABORATORY

Radiation Treatment planning in malignant diseases of

- Central nervous system
- Head – Neck
- Thoracic cavity
- Pelvis
- Breast
- Lymphatic tissue

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication, uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 60 Laboratory — 30 Self -Study — 90 Course total — **180**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written theory final exam (100%) that includes: – Essay questions – Short answer questions to check critical thinking and depth of knowledge Laboratory At the end of the semester oral and written MCQ examination.

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Μ. Μπαλαφούτα. ***Ειδικές εφαρμογές Ακτινοθεραπείας***. Εκδόσεις Κωνσταντάρας 2019
2. Κοσμίδης Π, Τσακίρης Γ. ***Ογκολογία – Ραδιοβιολογία***. Εκδόσεις Λίτσας 2003. ISBN:960-372-069-0
3. Τσέκερης Π. ***Αρχές Ακτινοβιολογίας Ακτινοθραπείας.*** Εκδόσεις Γέφυρα, 2006, ISBN 960-88831-3-X
4. Κύργιας Γ. ***Ακτινοθεραπευτική Ογκολογία Τόμος Α.*** Εκδόσεις Λίτσας 2000. ISBN:960-372-028-3set
5. Κοσμίδης Π, Τσακίρης Γ. ***Ογκολογία – Ραδιοβιολογία***. Εκδόσεις Λίτσας 2003. ISBN:960-372-069-0

ENGLISH

6. Perez C, Brady L. ***Principles and practice of Radiation Oncology***. Lippincott Williams Wilkins, 2004. ISBN-10: 0781763691
7. Cox JD. ***Moss' Radiation Oncology: Rationale, Technique, Results***. 8th ed Mosby, 2003. ISBN 0323012582

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6221-6222	**SEMESTER**	6th
COURSE TITLE	**COMPUTED TOMOGRAPHY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	8
LABORATORY/HOSPITAL PLACEMENT	6	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	INTRODUCTION TO COMPUTED TOMOGRAPHY SECTIONAL ANATOMY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC159/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.
Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

Theory

The aim of this course is to promote the ability of the student to understand the computed tomography and its applications in medical imaging. The evolution of the method and its multiple uses are presented along with the protocol of acquisition and image rendering. The modifications of the method are presented as they apply in several diseases. The main diseases are discussed and gross pathologies are presented.

Laboratory / Hospital placement

The students will familiarize with the practice of computed tomography by attending the departments of large hospitals in Attica. Students also train in image post processing and multiplanar reformations as they apply in different examinations. They observe and participate under supervision in all parts of an examination (patient admission, history taking, preparation, positioning, contrast media administration, scan acquisition, image processing and distribution).

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working in an interdisciplinary environment, new research ideas
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism
- Production of free, creative and inductive thinking

3. SYLLABUS

THEORY

1. Introduction to Computed Tomography. Basic principles. Equipment.
2. Spiral and multi slice Computed Tomography
3. Examination method. Image reconstruction. Image quality.
4. Image processing and reporting
5. Radiation protection in CT
6. Contrast media in CT
7. Computed Tomography of head, neck and spine
8. CT scan of the thorax I
9. CT scan of the thorax II
10. CT scan of the abdomen I
11. CT scan of the abdomen II
12. CT of retroperitoneal space
13. Specialized applications of CT

LABORATORY

Training in CT Departments of large Hospitals in examinations of the entire body. Familiarization with the whole process of the examination and gross abnormal findings. Use of contrast media and handling of contrast reactions.

Patient preparation, contrast media, injectors. Image artifact reduction. Post processing and image analysis. The examination and scanning process, multi phase scanning, particularities in scanning different regions. Issues regarding radiation dose and optimization.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>Face to face in the classroom</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication, uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Laboratory / Hospital Placement</td><td>90</td></tr><tr><td>Self -Study</td><td>115</td></tr><tr><td>Course total</td><td>240</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory
Final exam (100%) that includes:
– Essay questions
– Short answer questions
– Multiple choice questions

Laboratory
At the end of the semester written MCQ examination (60%)
Hospital supervisor grade (40%).</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης,Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6
2. Αλειφερόπουλος Δ. ***Αξονική Τομογραφία***. Λίτσας, 2003. ISBN:906-372-073-9
3. Hofer M. ***Διδακτικό Εγχειρίδιο Υπολογιστικής Τομογραφίας***. Παρισιάνου Α.Ε., 2004 ISBN: 960-394-265-0

ENGLISH

1. Euclid Seeram. ***Computed tomography: physical principles, clinical applications, and quality control***. 3rd ed, 2009, Saunders ISBN 978-1-4160-2895-6
2. Reiser, M.F.; Becker, C.R.; Nikolaou, K.; Glazer, G. (Eds.). ***Multislice CT***. 3rd ed. 2009 ISBN 978-3-540-33125-4
3. Mathias Prokop, Michael Galanski, Aart Van Der Molen, Cornelia Schaefer-Prokop. ***Spiral and Multislice Computed Tomography of the Body***. Thieme,2003. ISBN:0865778701
4. AAPM - American Association of Physicists in Medicine (2010) ***Comprehensive Methodology for the Evaluation of Radiation Dose in X-ray Computed Tomography***. Report No. 111

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	Health and Care Sciences		
ACADEMIC UNIT	Biomedical Sciences		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	6231	**SEMESTER**	6th
COURSE TITLE	**INTRODUCTION TO MAGNETIC RESONANCE IMAGING – MEDICAL IMAGE ANALYSIS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	2	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/ C
Prerequisite Courses	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://bisc.uniwa.gr/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

Upon successful completion of the course the student will be able to:

- Understand the thinking of routine protocols in relation to contrast of tissues and level of anatomy
- Use efficiently the appropriate techniques in order to achieve the best image quality and the most reliable diagnostic information in every patient
- Apply the appropriate optimization techniques (eg. Techniques of artifact reduction)
- Mention the amendments of every imaging parameter and how it influences the spatial resolution, the SNR and the scan time.
- Choose the appropriate sequences for a specific anatomic region in routine examinations

- Become familiar with every anatomic region in multiple space levels
- Become able to recognize gross pathological situations such as tumors in MRIs
- Understand the techniques of digital image processing in modern computing systems

Aim and objectives of the course: The aim of the course is to present to the student the indications and imaging protocol design of the various anatomical regions with magnetic resonance imaging. To acquaint the student with the necessary practical steps of using and optimizing the protocols that will satisfy the anatomy of each examined area and the particularities of each patient. Also, to understand the techniques of digital image processing in modern computing systems.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Self work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

1. Introduction to Magnetic Resonance Imaging – Physical Principles
2. Contrast and image weighting
3. Spatial encoding and image formation
4. Technical Artifacts
5. Pulse sequences
6. Image quality
7. Routine protocols of brain and neck
8. Routine protocols of spine
9. Routine protocols of abdomen and pelvis
10. Tissues suppression techniques and MRI in high magnetic fields
11. Parallel imaging and Echo Planar Imaging Techniques
12. Display of image, image formation and digital processing
13. Mathematical methods of image processing - transformations

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>In the classroom</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Self -Study</td><td>45</td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical</td><td>Written final exam(100%) that includes:
– Essay Questions
– Multiple Choice Questions
– Short Answer Questions</td></tr>
</table>

examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης, Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6
2. PeterReimer. ***Κλινική Μαγνητική Τομογραφία***. Ι. ΚΩΝΣΤΑΝΤΑΡΑΣ, 2013. ISBN9789606802508
3. Απ. Καραντάνας***Μαγνητική Τομογραφία***. εκδ. ΒΗΤΑ 1997
4. WestbrookC. ***MRI με μια ματιά***. BlackwellScience 2002. Εκδόσεις Παρισιάνου 2004.
5. Καρατόπης Α.- Κανδαράκης Ι. ***Ιατρική Φυσική-Βιοϊατρική Τεχνολογία: Απεικόνιση Μαγνητικού Συντονισμού.***Πανεπιστημιακές Εκδόσεις "Αράκυνθος", έκδοση 2008. ISBN: 978-960-91034-9-7
6. Κουμαριανός Δ. ***Μαγνητική Τομογραφία: από τις βασικές αρχές στην κλινική πράξη.*** 2013, Εκδόσεις Ζεβελεκάκη ISBN 978-9608 995291

ENGLISH

7. McRobbie DW, Moore EA, Graves MJ, Prince MR. ***MRI from Picture to Proton.*** 2nd ed. CambridgeUniversityPress, 2006. ISBN-13 978-0-521-68384-5
8. Westbrook C, Kaut Roth C, Talbot J. ***MRI in Practice***. 4th ed Wiley Blackwell Science, 2011. ISBN:978-1444337433
9. C. Westbrook. ***Handbook of MRI Technique***. 3rd ed Wiley Blackwell; 2008. ISBN 978-1405160858
10. Bushong S. ***Magnetic Resonance Imaging: Physical and Biological Principles***. 2nd ed. St. Louis. Mo: Mosby; 2003. ISBN 0323014852

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	6241-6242	**SEMESTER**	6th
COURSE TITLE	**RADIOLOGY III**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	2	4
Laboratory	3	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/ C Specialization course	
Prerequisite Courses	-	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
COURSE WEBSITE (URL)	https://bisc.uniwa.gr/courses/BISC213	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

Upon successful completion of the course the student will be:

At the end of the course students will be:

- familiar with the work place and with a variety of cases and problems they are invited to learn how to solve, so that the image shows the abnormalities the best way possible
- capable of performing the radiographic projection on patients
- able to evaluate the images obtained as regards positioning of the patient, alignment, satisfactory demonstration of the expected anatomy and quality
- familiar with everyday problems that arise during radiography and which relate to patient limitations in cooperation / positioning due to ill health

- familiar with special radiological examinations of the digestive and urinary systems and also with specialist examinations
- familiar with positioning and assessment of the routine mammography views
- able to cooperate and support the radiologist performing fluoroscopic examinations
- able to modify the technique of examination according to the problem shown
- aware of possible side effects from administering contrast media and be able to offer help
- able to recognize grossly pathological images
- understand the expanded role of the Radiographer before, during and after the examination.
- Familiar with the special issues regarding imaging of children.
- Familiar with ultrasound and densitimetry

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Self work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

THEORY

1. Radioanatomy, imaging of upper digestive tract
1. Radioanatomy, imaging of the small intestine
2. Radioanatomy imaging of the colon
3. Radioanatomy, imaging of the urinary system
4. Radioanatomy imaging of the genital tract
5. Communication and radiation protection issues in children imaging
6. Mammography
7. Interventional radiography
8. Ultrasound
9. Densitometry

HOSPITAL PLACEMENT

Acquiring knowledge and skills necessary to carry out diagnostic tests under different conditions. Focus on the harmonious integration of theoretical and technical knowledge through clinical practice.

Hospital practice. Participation and familiarity with clinical practice through radiological examinations performed in conventional X-ray units, fluoroscopy, angiography and mammography. Mobile and theater radiography. Fluoroscopy in oerating theaters. Familiarity with ultrasound. Venipuncture. Demonstration of equipment for parenteral administration of medicines etc. Visit the interventional imaging suite.

Theory goes with hospital placement. Students get Undergraduate Internship in the hospital on the subjects presented in theory.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	In the classroom face to face and in the laboratory and hospital
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 30 Lab/Hospital Placement — 39 Self -Study — 51 Course total — **120**
STUDENT PERFORMANCE EVALUATION	Written final exam(100%) that includes: – Essay Questions – Multiple Choice Questions

Description of the evaluation procedure *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	– Short Answer Questions

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης, Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6
2. PeterReimer. ***Κλινική Μαγνητική Τομογραφία***. Ι. ΚΩΝΣΤΑΝΤΑΡΑΣ, 2013. ISBN9789606802508
3. Απ. Καραντάνας***Μαγνητική Τομογραφία***. εκδ. ΒΗΤΑ 1997
4. WestbrookC. ***MRI με μια ματιά***. BlackwellScience 2002. Εκδόσεις Παρισιάνου 2004.
5. Καρατόπης Α.- Κανδαράκης Ι. ***Ιατρική Φυσική-Βιοϊατρική Τεχνολογία: Απεικόνιση Μαγνητικού Συντονισμού.***Πανεπιστημιακές Εκδόσεις "Αράκυνθος", έκδοση 2008. ISBN: 978-960-91034-9-7
6. Κουμαριανός Δ. ***Μαγνητική Τομογραφία: από τις βασικές αρχές στην κλινική πράξη.*** 2013, Εκδόσεις Ζεβελεκάκη ISBN 978-9608 995291

ENGLISH

7. McRobbie DW, Moore EA, Graves MJ, Prince MR. ***MRI from Picture to Proton***.2nded. CambridgeUniversityPress, 2006. ISBN-13 978-0-521-68384-5
8. Westbrook C, Kaut Roth C, Talbot J. ***MRI in Practice***. 4thed Wiley Blackwell Science, 2011. ISBN:978-1444337433
9. C. Westbrook. ***Handbook of MRI Technique***. 3rded Wiley Blackwell; 2008. ISBN 978-1405160858
10. Bushong S. ***Magnetic Resonance Imaging: Physical and Biological Principles***. 2nd ed. St. Louis. Mo: Mosby; 2003. ISBN 0323014852

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH& CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY & RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)c		
COURSE CODE	6251	**SEMESTER**	6th
COURSE TITLE	**PHYSICS OF NUCLEAR MEDICINE**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	3
Add rows if necessary. T he organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized, general knowledge, skills development*	SPECIAL BACKGROUND
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

Development of theoretical infrastructure for the courses of Nuclear Medicine and Isotope Therapy

In particular, the understanding of the operation of the systems used in nuclear medicine and the parameters involved in the imaging with radiopharmaceuticals is provided.

Students should be able to display knowledge and comprehension of the basic science topics underpinning all aspects of Nuclear Medicine. Preparation and patient support.

Students will be theoretically prepared prior to practicing in the Nuclear Medicine Department in Hospitals

Students will be able to:

- Understand the systems used in the Department of nuclear medicine
- Use these systems and interpret the results of the measurements.
- Have deep understanding and develop skills in nuclear medicine systems, to provide safe and effective services. Adherence of Diagnostic Reference Levels. Compliance with the legislation

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Optimal selection of operating parameters of imaging and measurement systems in nuclear medicine
- Understanding of clinical protocols
- Adequate knowledge in the use of radiopharmaceuticals for diagnosis and treatment
- Safe management of radioactive materials and radioactive waste disposals
- Search for, analysis and synthesis of data and information,with the use of the necessary technology
- Adapting to new situationsDecision-making
- Working independently-Teamwork

3. SYLLABUS

THEORY

1. The structure of the nucleus. Radioactivity. Interaction of gamma radiation and matter.
2. Production of radioisotopes. Main isotopes used in nuclear medicine.
3. Structure of Nuclear Medicine Laboratory. Departmental Equipment. Basic structure of measuring and imaging systems.
4. Collimators, Scintillators, photomultiplier tubes.
5. Signal processing, radioisotope spectrum.
6. Linear Scintillators. Gamma - Camera. Specific types of gamma - Camera.
7. Measuring Devices in Nuclear Medicine.
8. Image quality in nuclear medicine. Noise.
9. Tomographical techniques in nuclear medicine. SPECT and PET systems.
10. Dynamic tests. Quantitative processing of digital data. MUGA.
11. Computers in radionuclide imaging
12. Quality assurance. Radiopharmaceuticals. Pharmacokinetics.
13. Safety in Nuclear Medicine Laboratories. Radiation protection. Radioactive waste handling, legislation.
14. Special examinations. Internal dosimetry. Departmental analysis.
15. Other nuclear radiation detectors. In vitro tests.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, Communication with students*	Use of ICT in teaching, laboratory education, Communication with students. Lesson e-class notes and data.	
TEACHING METHODS *The manner and methods of teaching are described in detail. Lectures,seminars,laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity,etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	45
	Writing work in groups of 3 students and oral presentation	45
	Course total	***90***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final written evaluation on 10 topics Alternatively written final evaluation with a weighting factor of 0,7 and participation in a working group that will present the work in an audience, with a weighting factor of 0,3. In this way the cooperation between the students is promoted.

5. RECOMMENDED BIBLIOGRAPHY

1. Κανδαράκης Ι. ***Φυσικές & Τεχνολογικές αρχές πυρηνικής ιατρικής***. Έλλην, 2002. ISBN 960-286-929-1
2. Κανδαράκης**Ι. *Ιατρική Φυσική-Βιοϊατρική Τεχνολογία: Πυρηνική Ιατρική.*** Πανεπιστημιακές Εκδόσεις "Αράκυνθος", έκδοση 2008, σελίδες 437, ISBN: 978-960-91034-8-0.
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4. Προυκάκης Χ. ***Ιατρική Φυσική.*** Τόμος 1ος, εκδόσεις Παρισιάνου ΑΕ, 2004 ISBN: 960-394-301-1
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9. Glenn F. Knoll. ***Radiation Detection and Measurement.*** 3rd Edition John Wiley & Sons, 2000. ISBN: 978-0-471-07338-3
10. McAllister JM ***Radionuclide techniques in medicine***. Cambridge University Press, 1979.
11. J.C. Harbet, W.C. Eckelman, R.D. Neumann, ***Nuclear Medicine Diagnosis and Therapy***, 1996

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6261 (6a)	**SEMESTER**	6th
COURSE TITLE	**CLINICAL PRACTICE PLACEMENT (UNDERGRADUATE INTERNSHIP)**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**DURATION**	**CREDITS**
	4 months	6
Add rows if necessary.The organization of teaching and the teaching Methods used are described in detail at (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CE / SC (COMPULSORY ELECTIVE / SPECIALIZATION COURSE)
PREREQUISITE COURSES:	In accordance with the provisions in force from time to time
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	…YES
COURSE WEBSITE (URL)	..

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A* • *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* • *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* • *Guidelines for writing Learning Outcomes*
The Undergraduate Internship in the profession of Medical Padiologic Technology aims to offer the students the opportunity to: a) realize and appreciate in real circumstances the role they are going to play as Healthcare professionals in the departments of Medical Imaging, Nuclear medicine and Radiotherapy. b) acquire the practical skills that are necessary for the smooth function of the Departments c) participate if they wish in research projects The students gain experience and apply knowledge as members of staff in the departments of Imaging and Radiotherapy.

Settling and deepening of the knowledge acquired on studies both theoretical and laboratoty / hospital placements.

The aim of Undergraduate Internship is the final preparation of the students just before graduation and at the outset of their professional career. At this time through active participation in the running of the departments students may crosscheck their knowledge and skills and come across other new interesting aspects of professional practice.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Search for, analysis and synthesis of data and information,
- with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas
- Project planning and management
- Respect for difference and multiculturalism
- Respect for the natural environment
- Showing social, professional and ethical responsibility and
- sensitivity to gender issues
- Criticism and self-criticism
- Production of free, creative and inductive thinking

3. SYLLABUS

Attend and Participate like a member of junior staff in the function and everyday running of modern Departments of Medical Imaging, Nuslear medicine and Radiotherapy in large multidisciplinary Hospitals of Attica.

The Undergraduate Internship can be accomplished either split in 2 halves after the 6th and 8th semesters or in full after the 8th semester in order to make sure that students have the required knowledge and skills background to attend successfully ans safely.

4. **TEACHING** and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distance learning,etc.*	General Hospital like members of staff
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, Communication with students*	Use of electronic technology in communication with students

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	*Semester workload*
PRACTICE	320
Course total	320

STUDENT PERFORMANCE - EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions ,open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

The Undergraduate Internship is carried out under the supervision of the Department's faculty members and is coordinated by the Internship Committee.

The evaluation of the internship is done with the participation of hospital supervisor and faculty members. The internship committee determines how the course is graded.

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6271 (6b)	**SEMESTER**	6th
COURSE TITLE	**SPECIALIZED APPLICATIONS OF RADIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/CE SPECIALIZATION COURSE /COMPULSORY ELECTIVE
Prerequisite Courses	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC193/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

ConsultAppendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

On completion of the course the students will know the basics about:

- ultrasound and its clinical applications
- imaging techniques in dentistry
- methods of bone densitometry
- veterinary imaging
- forensic radiography
- industrial radiography
- the role of radiography in the assessment of museum articles

Aim and objectives of the course: The aim of the course is to further student knowledge about specialized applications of radiography such as current applications of a mammography and image guided interventions, ultrasound dental radiography, bone

densitometry, forensic imaging, and veterinary radiography. There will also be presented radiographic applications in industry (non destructive testing) and in assessment and conservation of ancient and museum articles.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently

3. SYLLABUS

1. Specialized applications of mammogragraphy
2. Image guided breast interventions
3. Ultrasound principles and imaging applications
4. Radiographic equipment used in dentistry (image production, recording and processing)
5. Dental projections
6. CT and MRI applications in dentistry and orofacial surgery
7. Temporomandibulat joint imaging- sielography
8. Bone densitometry
9. Veterinary radiography
10. Forensic Imaging
11. Industrial radiography
12. Imaging museum articles and art

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS	Use of ICT for teaching. Use of email and department site for communication with students

<table>
<tr><td>TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Self -Study</td><td>75</td></tr><tr><td>Course total</td><td>120</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final exam(100%) that includes:
– Essay Questions
– Multiple Choice Questions
– Short Answer Questions</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης, Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6
2. Lasserre Anke, Blohm Ludwig. ***Εγχειρίδιο ακτινολογίας.*** Εκδόσεις Παρισιάνου
   ΑΕ, 2007 ISBN 960-394-495-9
3. Α. Αγγελόπουλος, Ν. Σπυρόπουλος, Κ.Τσιχλάκης. ***Σύγχρονη Στοματική & Γναθοπροσωπική Διαγνωστική & Ακτινολογία***. Ιατρικές Εκδόσεις Λίτσας, Αθήνα 2001
4. Ν. Σπυρόπουλος, Κ. Νικοπούλου-Καραγιάννη, Κ.Τσιχλάκης.***Ενδοστοματική Ακτινογραφία***. Ιατρικές Εκδόσεις Λίτσας, Αθήνα 2003
5. Αγγελος Κλ. Δεσίρης. ***Κτηνιατρική Ακτινολογία***. *2009,* Σύγχρονη Παιδεία, *ISBN* 978-960-357-090-5

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6. Thomas L Pope Jr., John H. Harris Jr. ***Harris & Harris' The Radiology of Emergency Medicine.*** 5th ed Walters Kluwer, 2013 ISBN 978-1451107203
7. David T. Schwartz. ***Emergency Radiology - Case Studies***. McGraw-Hill, 2008. ISBN 978-0-07-140917-9
8. Joen Iannucci, Laura Jansen Howerton. ***Dental Radiography***. 4th Ed, Elsevier, 2011, ISBN 978-1437711622
9. Donald E. Thrall. ***Textbook of Veterinary Diagnostic Radiology***. 6e, 2012 Elsevier ISBN 978-1455703647
10. ***The State of Forensic Radiography in the United States*** - ASRT http://www.asrt.org/docs/whitepapers/Forensic_Radiography_White_PaperFIN.pdf March 25, 2010. The State of Forensic. Radiography in the United States. Myke Kudlas, M.Ed., R.T.(R)(QM), Teresa Odle, B.A., ELS, Lisa Kisner, B.A.. Published
11. ***Industrial Radiography. Image forming techniques***. ©2007 General Electric Company. GEIT-30158 (01/07) on line
12. Julia Tum, Andrew Middleton & Janet Lang. ***Radiography of Cultural Material***. Elsevier 2005, ISBN 07506 6347

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6281 (6c)	**SEMESTER**	6th
COURSE TITLE	**BREAST IMAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/CE SPECIALIZATION COURSE / COMPULSORY ELECTIVE
Prerequisite Courses	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC156/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

On completion of the course the student will be able to know:

- the methods available for breast imaging
- the interventional techniques
- the modern methods of breast imaging
- the principles that govern breast screening
- the effects of breast pathology on the female psychology
- the particularities of imaging the male breast

Aim and objectives of the course: The course covers breast imaging with all modalities and their variations along with interventional techniques. The principles of breast screening are presented in Greek and international guidelines. Symptomatic diagnostic breast imaging is explained and the differences from routine screening are presented. The main pathology conditions are presented and imaging protocols are discussed.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Decision-making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Project planning and management
- Respect for difference and multiculturalism

3. SYLLABUS

1. Anatomy and pathology of breast
2. Mammography screening and diagnostic
3. Digital Mammography - CAD
4. Breast Tomosynthesis
5. Quality characteristics of mammograms
6. Patient psychology and the role of the radiographer. Taking the relevant to breast medical history. Radiation protection issues.
7. Analysis and mammography interpretation
8. Abnormal findings in mammograms – assessment –mass –microcalcifications- architectural distortion
9. BIRADS system
10. Breast Ultrasound
11. Breast MRI
12. Image guided interventions
13. Postoperative breast imaging – Breast implants
14. The male breast
15. Nuclear Medicine applications in breast imaging

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS	Use of ICT for teaching. Use of email and department site

<table>
<tr><td>TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Self -Study</td><td>45</td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final exam (100%) that includes:
– Multiple Choice Questions
– Short Answer Questions
– Closed questions</td></tr>
</table>

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Δημητρόπουλος Ν., Κεραμόπουλος Α. ***Η μαστογραφία στην κλινική πράξη***. Παρισιάνου Α.Ε. 2000. ISBN: 960-340-158-7
2. Απαρτόγλου-Παντελέων Σ, Ταρασίδου-Κουτσουμάρη **Ο. *Άτλαντας μαστογραφίας***. Π.Χ. Πασχαλίδης 1999, ISBN : 960-8122-07-4
3. Ιωαννίδου - Μουζάκα, Λυδία ***Σύγχρονη μαστολογία***. 1996. ISBN : 960-85754-0-0

ENGLISH

4. Debra Ikeda MD and Kanae Kawai Miyake. ***Breast Imaging: The Requisites,*** *3e* (Requisites in Radiology). Elsevier, 2016, ISBN-13: 978-0323329040
5. A. Thomas Stavros. ***Breast Ultrasound*** 1st Edition, Lipincott and Williams, ISBN-13: 978-0397516247
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10. ***European Guidelines for Quality assurance in breast cancer screening and diagnosis*****.** Euref, European Communities, 2006. ISBN: 92-79-01258-

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
DEPARTMENT	BIOMEDICAL SCIENCES		
SECTION	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6291	**SEMESTER**	6th
TITLE	**PATTERN RECOGNITION IN MEDICAL IMAGES- APPLICATIONS IN RADIOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**HOURS/WEEK**	**CREDITS**
Lectures	**3**	**3**
Lab	0	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course (SC) Compulsory Elective (CE)
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC176/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

Upon successful completion of the course the students will be able:

• To be familiar with the design and operation of medical image analysis systems used in Radiology.

• To be aware of the methodologies for mathematical quantification of texture properties, edge and other properties of the image (e.g. homogeneity texture- inhomogeneity in ultrasound images).

• To know the methods of classification into categories (e.g. benign - malignant cancer) of images based on the quantified properties of the digital radiographic image.

• To have knowledge of the methods of evaluating the quality of medical image analysis systems in Radiology.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Individual assignments
- Group assignments
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. COURSE SYLLABUS

Course aim:

Pattern Recognition System is a Decision Support System (DSS) that gives a possible diagnosis which is taken into account by the radiologist, in order to make the final diagnosis. With a command in the program, a series of elements from the image are collected (texture characteristics - a series of numbers that express the texture of the cell nucleus), on the basis of which a possible diagnosis of a degree of malignancy is made.

Computer analysis of digital medical images produced from modern radiological systems (e.g. CT and MRI images) is important: (a) to draw useful conclusions that illustratively differentiate between normal - healthy tissue and pathological tissue or pathological from pathological tissue (Grade I / Grade III) and (b) for the classification of the imaged texture into categories such as normal or abnormal. Image analysis differs from other types of image processing methods, such as restoration and quality optimization, as the final outcome is usually numerical rather than virtual. Consequently, image resolution is not concerned with improving image quality. It deals with the diagnosis, in a similar way that the radiologist examines an image: The computer examines the image, detects and quantifies features and properties of the image and suggests a possible diagnosis (e.g. benign - malignant cancer). A medical image analysis system includes: Production of features that quantify medical image properties, system design with methods of classification and evaluation of system reliability.

Course objective:

The student can formulate with a mathematical approach the structure of the radiological image analysis systems used.

Course field:

The subject of Pattern Recognition briefly includes the following sections:

- Medical image analysis
- Data acquisition- Samples preparation
- Data processing
- Image resolution- Feature extraction
- Pattern Classification
- Integrated system design
- Methods of evaluation and reliability of the system

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Theoretical lessons are carried out in the classroom. Lab work is carried out in the sector's X-ray rooms.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education,*	Use of ICT in teaching and laboratory training and the use of e-mail and the website of the Department for communication and information of students respectively. Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links,

<table>
<tr><td>communication with students</td><td>questionnaires, information for attending conferences and seminars related to the course, etc.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activities</th><th>Semester workload</th></tr><tr><td>Lectures</td><td>90</td></tr><tr><td>Laboratory work</td><td></td></tr><tr><td>Individual study</td><td></td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory

Written final exam (100%) that includes:
– Development Questions
– Multiple Choice Test
– Short Answer Questions</td></tr>
</table>

5. **RECOMMENDED BIBLIOGRAPHY**

1. Charlene Liew, "The future of radiology augmented with Artificial Intelligence: A strategy for success", European Journal of Radiology 102 (2018) 152-156.
2. Luca Sabaa, MainakBiswasb, et al. "The present and future of deep learning in radiology", European Journal of Radiology 114 (2019) 14-24.
3. Zhenwei Zhang, Ervin Sejdic, "Radiological images and machine learning: trends, perspectives, and prospects" Computers in Biology and Medicine(2019), in print 2019.
4. Philippe Lambin, JaapZindler, Ben G.L. Vanneste et al: "Decision support systems for personalized and participative radiation oncology", Advanced Drug Delivery Reviews 109 (2017) 131-153.
5. Bocchi L., Coppini G., De Dominicis R. and Valli G. "Tissue characterization from X-ray images". Med. Eng. Phys. 19, 336-342 (1997).
6. Fu K.S. and Pavlidis T. "Biomedical pattern recognition and image processing". VerlagChemie (1979).
7. Galloway M.M. "Texture analysis using gray level run lengths". Computer graphics

image processing 4, 172-179 (1975).
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12. Low A. "Computer vision and image processing". McGraw-Hill (1991).

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6(Undergraduate)		
COURSE CODE	6292 (6e)	**SEMESTER**	6th
COURSE TITLE	**HUMAN GENETICS**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	3
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special Background Course (SBC) Compulsory Elective(CE)		
PREREQUISITE COURSES:	_		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

AIM

The course material aims to present students with the principles of Genetics as applied to humans. A big part of the course concerns the role of Genetics in human health and the interaction of basic scientific knowledge and clinical application.

The genetic, molecular and chromosomal basis of inherited diseases, cancer, diseases with genetic predisposition as well as other pathological disorders are presented extensively.

The teaching course presents the basic principles with extensive use of examples.

The course touches and cover the branches of Genetic diagnostics, Genetic counseling and the emerging branch of "Genetics in Medicine".

Objectives and expected learning outcomes

Upon completion of the course, the students will be able to know and to understand:

- The organization of the human genome and the molecular etiology of various genetic diseases.
- The concept of genetic material sequencing and techniques, Sanger sequencing, Next Generation Sequencing (NGS), and the applications and ethical issues that arise.
- Terms such as molecular evolution of genes, population structure and natural selection. Apply the information to computer phylogenetic programs.
- The modern methodologies for the analysis of human genetic materials, but also clinical cases of genetic diseases.
- New knowledge opens for diagnosis, prognosis and treatment of genetic diseases (Gene Therapy).
- The ability to evaluate the continuous information from the latest developments in the field of related research and development.
- How to develop a research work either individually or in groups (Search the relevant literature, evaluate the data and writing.
- How to use general texts, reference books and a number of other resources to further develop knowledge through continuous independent learning.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Teamwork
- Working in an interdisciplinary environment
- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

3. SYLLABUS

Lectures

1. **Introduction to Human Genetics – The role of Genetics in health:** The human

genome and Chromosomes.

2. **Biochemical and molecular basis of genetic disease:** The structure of DNA. Macro and micro lesions. Mutations. Signal mutations and their location.
3. **Mendelian character inheritance in humans:** Study of heredity, law of Mendel. Basic Mendelian models of heredity- Nonmendelian models. Monogenic disorders and multifactorial heredity
4. **Hemoglobinopathies:** Thalassemia's, Rhesus (anti-D, IgG)
5. **Cytogenetics:** Chromosomes-Cytogenetics-Chromosomes Abnormalities-Clinical Cytogenetic: Disorders of Autosomes and the Sex Chromosomes (Down Syndrome, Edwards, Patau and Cri Du Chat syndrome)
6. **Detection Methods of genetic syndromes/Tutorial exercise:** FISH, PCR, Sequencing, karyotype.
7. **Genetics of Cancer in human:** Forms of family cancer, cancer syndromes (retinoblastoma, Heredity breast and ovary cancer, Familial Adenomatous Polyposis, Li-Fraumeni Syndrome, Von Hippel- Lindau Syndrome etc.)-Cytogenetics in Cancer
8. **Population Genetics:** The study of the history of evolution (classification, phylogeny based on morphological and molecular data, molecular clock). Evolution at the molecular level (rate of sequence evolution, transposable elements, evolution of genes and proteins, horizontal gene transfer). Diversity. Population structure. Natural Selection. Adaptation.
9. **Population Genetics/ Tutorial exercise:** The genome and databases. Introduction to the use of software for the analysis of polymorphisms of a nucleotide and the calculation of binding imbalance.
10. **Clinical Genetics and Genetic counseling/ Tutorial exercise:** Applications of Genetics in clinical practice. Genetic counseling- clinical cases of genetic diseases and their management. Prenatal screening.
11. **Genome Sequencing:** Human genome analysis program/its applications. Ethical dilemmas in Human Genetics. Sanger Sequencing, Next Generation Sequencing (NGS). Position-based cloning. Gene's mapping involved in genetic diseases.
12. **Gene Therapy:** The future Therapy. How it works its applications in the treatment of cancer, cystic fibrosis etc. Stem cells/Ethical dilemmas.
13. **Genetic Modification:** What is and how the method CRISPR-Cas9 works. Structural and functional analysis of Cas9 of the CRISPR system. The experimental and non-experimental applications to date. Ethical problems and Security for the modification of Human Genome.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the

<table>
<tr><td></td><td colspan="2">updating information of the students respectively.
• Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td colspan="2"><table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Interactive Teaching</td><td>12</td></tr>
<tr><td>Study and analysis of biblography</td><td>13</td></tr>
<tr><td>Essay writing</td><td>13</td></tr>
<tr><td>Independent Study</td><td>13</td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td colspan="2">1) Final written examination (60%) in Greek using:
• Multiple choice questionnaires and/or
• Short-Answer Questions and/or
• Open-ended questions and/or
• Problem Solving and/or
• Questions of critical thinking (understanding theory and evaluating way of thinking)

When given the topics of the final examination, students are informed about the evaluation system of each topic group, depending on their degree of difficulty and how it is taken into account the completeness and the clarity of the answer, the degree of critical thinking of the student and the language Proficiency.

2) Presentation of essays (40% of theory)
The knowledge of theory is tested in the final examination mentioned above, while in case of individual or group essays, the degree of the latter participates up to 40% in the formation of the degree of the theory.</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

Greek

1. Thomson and Thomson. ***Medical Genetics*** (translated in Greek edn), PASCHALIDIS PUBLICATIONS, 2011
2. Krebs J. Lewin's, ***Genes X***, (translated in Greek edn), PUBLICATIONS Broken Hill 2012
3. Brown T.A., ***Genomes*** (translated in Greek edn), PUBLICATIONS Broken Hill 2010

English

4. Ricki Lewis, ***Human Genetics***, ed McGrow- Hill Science Engineering/ Math;6th ed 2004
5. Muin J Khoury et al, ***Genetic and public health in the 21st century***, Ed Oxford University Press, 2000
6. Michael Cummings, ***Human Hereditary: Principles and issues***, Ed Brooks/Cole 2005

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES			
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES			
SECTOR	RADIOLOGY AND RADIOTHERAPY			
LEVEL OF STUDIES	6 (UNDERGRADUATE)			
COURSE CODE	6293 (6f)	**SEMESTER**	6th	
COURSE TITLE	**MOLECULAR BIOLOGY**			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures			3	3
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special Background Course (SBC) Compulsory Elective (CE)			
PREREQUISITE COURSES:	_			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aim of the course:

The theoretical lectures of the course introduce students to basic concepts, principles and methods of molecular biology used in laboratories providing services to the public and in research protocols. Students upon completion of the course will be able to understand both the basic concepts of molecular biology and the theoretical background of basic methods of molecular biology. Students after the end of the semester, must have acquired good theoretical knowledge of modern molecular methods.

Objectives and expected learning outcomes

Upon completion of the course, the students will be able to know and to understand:

- Elements and control mechanisms of gene expression and the related molecular methods used to study it.
- Data on transgenic animals and genetic modification.
- Elements of bioinformatics and its applications in molecular biology.
- How to use general texts, reference books and a range of other resources to further develop knowledge through continuous independent learning.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Teamwork	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Research, analyze and synthesize data and information by using the necessary technologies
- Autonomous individual work
- Teamwork
- Work in an interdisciplinary environment
- Production of new research ideas
- Respect for the natural environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

THEORY

1. **Structure and properties of DNA and RNA**: Central dogma of molecular biology - DNA- Structure and function. Chromatin Forms-Chromosomes. DNA denaturation, rearrangement and DNA ligation. Nucleic acid hybridization. Supercoiled DNA, topoisomerases. Bacterial and eukaryotic chromosomes. Nucleosomes, active chromatin. Relationship between genome size and organ complexity. Repetitive DNA. The genetic material of viruses and bacteriophages.
2. **Recombinant DNA technology**: Restriction enzymes (endonucleases). Artificial ligation of DNA fragments. DNA mapping using restriction enzymes.
3. **Cloning, cloning vectors.**
4. **Nucleic acid hybridization:** Detection and characterization of specific DNA sequences, probes, hybridizations using Southern, Northern, etc.
5. **Determination methods of primary DNA structure**. Research programs for determining whole genomes of organisms.
6. **Polymerase chain reaction (PCR) and its applications.** Real time polymerase chain reaction (real time PCR) and its applications

7. **DNA replication:** Protein factors and replication enzymes. Mechanisms of DNA replication in prokaryotic and eukaryotic organisms. The replication mechanisms in bacteriophage DNA as well as in DNA and RNA viruses.

8. **Transcription:** Transcription enzymes. Promoter sequences. Transcription mechanism in prokaryotic organisms. RNA maturation. Regulatory mechanisms.

9. **Transcription in eukaryotic organisms:** Specific features. Transcription factors. RNA maturation. Regulation mechanisms of transcription.

10. **Protein biosynthesis (translation):** Genetic code, instability, repression, mRNA origin and evolution of the genetic code. Mechanisms of protein synthesis. Structure and functionality of tRNAs. Structure and functionality of ribosomes. Role of ribosomal RNA in protein synthesis.

11. **Gene expression study** using molecular biology methods such as RT-PCR and qRT-PCR as well as microarrays and RNA-sequencing technology

12. **Transgenic animals and genetic modification**

13. **Bioinformatics in molecular biology**

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively. • Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)

TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	39
	Interactive Teaching	12
	Study and analysis of bibliography	13
	Essay	13
	Independent study	13
	Course total	90

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory-lectures:** 3) Final written examination (60%) in Greek using: • Multiple choice questionnaires and/or • Short-Answer Questions and/or • Open-ended questions and/or • Problem Solving and/or • Questions of critical thinking (understanding theory and evaluating way of thinking) When given the topics of the final examination, students are informed about the evaluation system of each topic group, depending on their degree of difficulty and how it is taken into account the completeness and the clarity of the answer, the degree of critical thinking of the student and the language Proficiency. 4) Presentation of essays (40% of theory) The knowledge of theory is tested in the final examination mentioned above, while in case of individual or group essays, the degree of the latter participates up to 40% in the formation of the degree of the theory.

5. RECOMMENDED BIBLIOGRAPHY

Greek

1) ***Molecular Biology of the Gene*** (2nd Greek-7th American Edition). James Watson, Tania Baker, Stephen Bell, Alexander Gann, Michael Levine, Richard Losick. UTOPIA Publishing. 2015
2) Krebs J.: ***Lewin's Genes X*** (10th edition). Broken Hill. 2012
3) ***Principles of Molecular Biology***. Burton E. Tropp. Academic Publications J. Basdra & Co. 2014
4) ***Biology: The core***. E. Simon. Parisianou S.A, 2015
5) Brown T.A.: ***Genomes 3***. Broken Hill. 2010

English

1) Nessa Carey.: ***The epigenetics revolution. How modern biology is rewriting our understanding of genetics, disease and inheritance***. Columbia University Press, 2013

9.5.4 7th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	7211-7212	**SEMESTER**	7th
COURSE TITLE	**MAGNETIC RESONANCE IMAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	6
Hospital placement	3	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY	
Prerequisite Courses	INTRODUCTION TO MAGNETIC RESONANCE IMAGING SECTIONAL ANATOMY	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC284/	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

On completion of the course the student will be able to:

- understand how protocol design of routine examinations affects tissue contrast and imaging planes
- use protocol parameters in order to produce images of high quality and reliable diagnostic yield.
- use techniques that improve image quality (e.g. artifact reduction)
- know the effect of imaging parameter modification on spatial resolution, SNR and scan time
- choose the series of sequences needed for imaging certain areas
- recognize anatomy on different planes
- recognize gross image pathology

Aim and objectives of the course is to present the indications for MRI and protocol design of different body areas. Also, to familiarize the students with practical use and protocol

optimization depending on the region imaged and the particularities of the patient.
In the theory part the student becomes able to design protocol for routine applications and understands the reasons for specific parameter selection.
In the laboratory/hospital placement the student appreciates and understands sequence selection and design in order to optimize image in real work circumstances.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Decision-making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Project planning and management
- Respect for difference and multiculturalism

3. SYLLABUS

THEORY

1. Head and neck MRI protocols
2. Spine MRI protocols
3. Chest MRI protocols
4. Upper Abdomen MRI protocols
5. Pelvis MRI protocols
6. Upper Limb MRI rotocols
7. Lower Limb MRI protocols
8. The basics of functional MRI
9. Tissue Supression techniques
10. Artifacts in MRI
11. Acquisition gating techniques
12. Image quality in MRI
13. Parallel Imaging
14. Echo Planar Imaging
15. High field MRI
16. Flow phenomena and MRA

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face in the classroom and in hospital training

Face-to-face, Distance learning, etc	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 45 Hospital Placement — 39 Self -Study — 95 Course total — **180**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	*Theory* Written final exam (100%) *Hospital Placement* Grade from hospital supervisor Written test

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1. Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης,Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6

2. PeterReimer. ***Κλινική Μαγνητική Τομογραφία***. Ι. ΚΩΝΣΤΑΝΤΑΡΑΣ, 2013. ISBN97896068025083.

3. Απ. Καραντάνας ***Μαγνητική Τομογραφία***. εκδ. ΒΗΤΑ 1997

4. WestbrookC. ***MRI με μια ματιά***. BlackwellScience 2002. Εκδόσεις Παρισιάνου 2004.

5. Καρατόπης Α.- Κανδαράκης Ι. ***Ιατρική Φυσική-Βιοϊατρική Τεχνολογία: Απεικόνιση Μαγνητικού Συντονισμού.***Πανεπιστημιακές Εκδόσεις "Αράκυνθος", έκδοση 2008. ISBN: 978-960-91034-9-7

6. Κουμαριανός Δ. ***Μαγνητική Τομογραφία: από τις βασικές αρχές στην κλινική πράξη.*** 2013, Εκδόσεις Ζεβελεκάκη ISBN 978-9608 995291

ENGLISH

7. McRobbie DW, Moore EA, Graves MJ, Prince MR. ***MRI from Picture to Proton***. 2nd ed. Cambridge University Press, 2006. ISBN-13 978-0-521-68384-5

8. Westbrook C, Kaut Roth C, Talbot J. ***MRI in Practice***. 4th ed Wiley Blackwell Science, 2011. ISBN:978-1444337433

9. C. Westbrook. ***Handbook of MRI Technique***. 3rd ed Wiley Blackwell; 2008.ISBN 978-1405160858

10. Bushong S. ***Magnetic Resonance Imaging: Physical and Biological Principles***. 2nd ed. St. Louis. Mo: Mosby; 2003. ISBN 0323014852

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	7221-7222	**SEMESTER**	7th
COURSE TITLE	**RADIATION ONCOLOGY II – MODERN APPLICATIONS OF RADIOTHERAPY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	7
Hospital placement	4	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	RADIOTHERAPY MEDICAL PHYSICS
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC265/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

On completion of the course the student will be able to:

- know the different types of radiotherapy equipment and how to use it
- know the basics of medical oncology
- know the purpose of the applied radiotherapy treatment
- know the routes of tumor spread and how to apply treatment for palliation or therapy
- know in depth the particular issues relating to modern radiotherapy treatments in order to participate safely and effectively in treatment application and research

Hospital Placement

The aim is for the student to understand, familiarize and practice teletherapy treatment planning as well as to understand the extended role of the radiotherapy technologist, their responsibilities and duties.

The student familiarizes with Radiotherapy techniques which are evolving very fast recently

offering new solutions and treatments for oncology patients, like, Proton therapy, Stereotactc Radiosurgery, Intensity Modulated Radiation Therapy, Cyberknife, VMAT and Tomotherapy.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Project planning and management
- Respect for difference and multiculturalism
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism
- Production of free, creative and inductive thinking

3. SYLLABUS

THEORY

1. Modern Radiotherapy Techniques. Proton therapy, Stereotactc Radiosurgery, Intensity Modulated Radiation Therapy, Cyberknife, VMAT and Tomotherapy .
2. Breast cancer: introduction, anatomy, epidemiology, etiopathogenesis, prevention, biology and spread, clinical presentation, staging, carcinomas with specific clinical picture. diagnosis, self-examination, medical examination, mammography, other medical diagnostic procedures
3. Breast cancer: treatment, radiotherapy, radiotherapeutic techniques, treatment of metastasis, prognosis.
4. Malignant tumors of the digestive system: introduction, pathology (oesophagus, stomach, small intestine, colon, rectal tube), oesophageal cancer (epidemiology, etiopathogenesis, natural history, symptoms, diagnosis, staging, treatment, radiotherapy techniques, side effects, brachytherapy, prediction).
5. Gastric cancer (epidemiology, etiopathogenesis, clinical picture, diagnosis, staging, treatment, radiotherapy, prognosis)
6. Colorectal cancer (epidemiology, etiopathogenesis, clinical presentation, diagnosis, staging, treatment, surgical radiotherapy, chemotherapy), treatment of rectal cancer (surgery, radiotherapy, combined treatments), prognosis of rectal cancer.

7. Anal cancer (introduction, treatment, prognosis). Pancreatic cancer (epidemiology, etiopathogenesis, natural history, pathologoanatomy, symptoms, diagnosis, staging, treatment, prognosis), malignant neoplasms of the liver, malignant neoplasms of the gallbladder and extrahepatic bile ducts.
8. Malignant neoplasms of the urinary system- kidney tumors: epidemiology, etiology, tumors in adults (regional lymph nodes, clinical symptoms-diagnosis, paraneoplastic syndromes, treatment, side effects, prognosis). Cancer of the ureter, cancer of the urethra, cancer of the urethra in female, radiotherapy.
9. Bladder cancer: epidemiology, evolution, classification by clinical stage, symptoms, diagnosis, treatment methods (interstitial radiotherapy, intraoperative radiotherapy with electrons. External beam radiotherapy, bladder detection, radiotherapy planning. Preoperative radiotherapy, postoperative radiotherapy, salvation cystectomy following relapse after radiation therapy, long-term radiotherapy side effects, hyperfractionation protocols of dose, prognosis, conclusions).
10. Malignant neoplasms of the female reproductive system: malignant neoplasm of vulva (preoperative radiotherapy, postoperative radiotherapy), cancer of the vagina (natural history of disease, clinical presentation, diagnosis and staging, histological grading, treatment, radiotherapeutic techniques, therapeutic results)
11. Cervical cancer: epidemiology, histological classification, natural history of disease, local spread, vertical spread, horizontal spread, anteroposterior spread, lymphatic spread, metastatic spread, diagnosis, diagnosis of sub clinical cancers, diagnosis of clinical picture, diagnosis of advanced cancer, specific clinical picture, gynaecological exams, treatment (surgery, radiotherapy, external beam radiotherapy, brachytherapy, chemotherapy, general treatment recommendations), follow-up, results, complications.
12. Cancer of the uterine body: introduction, epidemiology, histopathologoanatomy classification, natural history of disease, symptoms, physical examination, complementary tests, treatment (surgical, radiotherapeutic techniques), treatment complications, therapeutic suggestions.

HOSPITAL PLACEMENT

Treatment Planning in teleradiotherapy of malignant tumors of:

- Urinary bladder
- Malignant tumors of the female genital tract
- Prostate cancer
- Malignant neoplasms of the penis and testis
- Malignant skin neoplasms
- Childhood malignancies
- Lymphomas Hodgkin and non-Hodgkin
- Metastatic disease

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom and in hospital training
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars

<table>
<tr><td></td><td>relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>40</td></tr><tr><td>Hospital Placement</td><td>60</td></tr><tr><td>Self -Study</td><td>110</td></tr><tr><td>Course total</td><td>210</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory
Written final exam (100%)
Essay questions

Hospital Placement
Oral and written examination with multiple choice questions</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1) Τσακίρης Γ, Θρουβάλας Ν, Κύργιας Γ. ***Ακτινοθεραπευτική Ογκολογία*** *Τόμος Β.* Εκδόσεις Λίτσας 2000. ISBN:960-372-028-3set

2) Κοσμίδης Π, Τσακίρης Γ. ***Ογκολογία – Ραδιοβιολογία***. Εκδόσεις Λίτσας 2003. ISBN:960-372-069-0

ENGLISH

3) Perez C, Brady L. ***Principles and practice of Radiation Oncology*****.** Lippincott Williams Wilkins, 2004. ISBN-10: 0781763691nb

4) Cox JD. ***Moss' Radiation Oncology: Rationale, Technique, Results***. 8th ed Mosby, 2003. ISBN 03230125

COURSE OUTLINE

1. **GENERAL**

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	7231-7232	**SEMESTER**	7th
COURSE TITLE	**NUCLEAR MEDICINE I**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	9
Hospital placement	6	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC285/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

THEORY

On completion of the course the student will know:

- Basic principles of anatomy and the gross pathological physiology of all systems of the body. (for understanding the mechanisms of uptake).
- The factors affecting the uptake of each radiopharmaceutical by body system
- Good use and control of the gamma Camera - (conventional or SPECT) with single or multiple collimators – together with good use of computers (PCs).
- a. Basic projections (exposures) per system. – Image processing
  b. Additional exposures per pathologic case which will be performed under the guidance of the physician.
- Receive detailed and simple (mini) medical history.
- Preparation of radiopharmaceuticals in Hot Laboratory.
- Techniques of image recording

HOSPITAL PLACEMENT

- Detailed knowledge of all equipment (the most modern γ-Camera, SPECT and SPECT/CT). Using the above equipment and modern PCs
- Perform all projections per disease.
- Learn to take mini Medical History.
- Ethics and deontology in the Nuclear Medicine Department.
- Storage and removal of old generators (sources). Handling radioactive waste.
- Radiation protection of room and staff.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Respect for difference and multiculturalism
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism

3. SYLLABUS

THEORY

1. Diagnostic and therapeutic applications of radioisotopes in Medicine. Design, evaluation and comparison of all known (old and modern) radiopharmaceuticals for imaging benign and malignant diseases (per system) of the entire human body.
2. Basic principles of radiopharmaceutical imaging- Mechanisms of uptake - biodistribution – radiation protection in their use.
3. Imaging the endocrine glands- benign and malignant disorders (thyroid, parathyroid and adrenal glands)
4. Imaging investigation of the gastrointestinal system (pathology of spleen, liver and bile duct).
5. Imaging of the skeleton, normal bone scan, imaging of metabolic bone diseases, benign and malignant bone disorders (primary tumors, metastatic bone disease)
6. Respiratory system-radiopharmaceuticals and techniques for perfusion and ventilation of lung and parenchymal diseases, inflammatory diseases - lung cancer - occupational diseases).

HOSPITAL PLACEMENT

Placement in tertiary referral centers. Training in all details of the preparation of radiopharmaceuticals (in the Hot Lab) and executing scintigraphs of various body organs for investigation of benign and malignant diseases. Role of the Radiographer in the Department of Nuclear Medicine. Cooperation with all staff in the department.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom and in hospital training
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of nondirected study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 60 Hospital Placement — 80 Self -Study — 130 Course total — **270**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	*Theory* Written final examination Essay questions *Hospital Placement* Written examination with multiple choice questions

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1) Γώγου Λ. ***18F-FDG PET***.Εκδόσεις **Σταμούλη 2004. ISBN 9603515280**

2) Γώγου Λ**.** ***Μαθήματα*** *Πυρηνικής Ιατρικής.* Εκδόσεις Σταμούλη 2014. ISBN 978-960-351-954-6

3) Ζάγκλης Α. ***Στοιχεία Ραδιοφαρμακολογίας*.** Εκδόσεις Λύχνος 2005.

4) Κανδαράκης Ι. *Πυρηνική Ιατρική*. Εκδόσεις Αράκυνθος 2007.

5) Γιαννοπούλου Χ.-Χουσιανάκου Ε. ***Πρωτόκολλα Καθημερινής πρακτικής στην πυρηνική ιατρική***. Εκδόσεις Βήτα 2000.

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6) O'Connor MR **The *Mayo Clinic Manual of Nuclear Medicine*** Mayo Foundation 1996

7) Moretti JL, Rigo P. et al. ***Imagerie Nucléaire Fonc****tionnelle*. Masson 1999

8) Sharp PF, Gemmell HG, Murray AD. ***Practical nuclear Medi****cine*. Springer 2005

9) Condi P, Cham DK. ***PET/CT***. Springer 2004

10) Fogelman I, Maisey MN, Clark SEM. ***An atlas of Clinical Nuclear Medicine***. Mosby, 1994. ISBN-10: 0815133413

11) Maisey MN, Britton KE, Gilday GDL. ***Clinical Nuclear Medicine***. Chapman and Hall, 2nd ed. 1991.

12) Valk, Delbeke, Bailey, Townsend, Maisey. ***Positron Emission Tomography: Clinical Practice***. Springer-Verlag, 2006.ISBN-10:1-85233-971-3

13) Lin EC and Abass Alavi. ***Pet and PET/CT***. Thieme 2005.

14) Freeman L. ***Nuclear Medicine Annual 2003*,** Lippincott 2003.

15) Freeman L. ***Nuclear Medicine Annual 2004***, Lippincott 2004

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	7241-7242	**SEMESTER**	7th
COURSE TITLE	**RADIATION PROTECTION**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	5
Hospital placement	2	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY	
Prerequisite Courses		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

On successful completion of the course, students will know:

- about the biological effects of ionizing radiation
- about the equipment and its operation for the measurement of radiation and radioactivity
- the implementation of the ALARA principle and Diagnostic Reference Levels
- about dose limits, calculation of the risk from exposure to radiation and radiation protection rules
- about Dosimetry and room characterization depending on room occupancy
- protection issues in order to address problems in the workplace (radiology, radiotherapy, nuclear medicine)
- the risks of ionizing radiation and the standards of radiation protection for workers, patients and the public

THEORY

The course aim is to present students with issues relating to radiation protection in Departments of Radiology, Radiotherapy and Nuclear Medicine, dosimetry and biologic effects of radiation.
Equipment for radiation measurements, personal protection, personal dosimetry, calculation of radiation shielding.
Ionizing radiations and food. Familiarization with radiation measurements and indices for patients, staff and the general public. Radiation protection protocols, DRLs, Regulations.
LABORATORY

- Measurements under real conditions of x-ray beams. Evaluation of measurements.
- DRL compliance
- Equipment Quality control.
- Visit Greek Atomic Energy Commission and Hospitals.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Decision making
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas

3. SYLLABUS

THEORY

1. Basic knowledge of nuclear physics, naturally and artificially produced radioactivity and its units, charged particles, X and gamma-rays, neutrons, penetration of these, radiation units.
2. Circulatory, respiratory, digestive system, the cell. Principles of radiobiology, physical and hereditary results
3. Cosmic radiation, radiation from terrestrial sources, artificial sources of radiation, radiation detectors (ionization chamber GM tube and analogue solid-state detectors). Scintillation counters, thermoluminescent detectors, photographic dosimeter
4. Methods of radiation protection (distance, shielding, time) neutron shielding. The characteristics of shielding materials
5. Waste Disposal (solids, liquids, gases, radioactive waste). Legislation.

6. Radiation protection from unsealed sources, internal contamination, X-ray protection equipment, X-ray room, control room. Quality control of x-ray tube, mammography, angiography, CT, portable x-ray unit, dental x-ray unit.
7. DRLs and their use on the patient.
8. X-ray radiotherapy, dynamic treatments, pregnancy, systematic examinations, radiation protection of patients.
9. Radiation Protection in Brachytherapy, intracavitary and interstitial applications
10. Radiation protection in nuclear medicine laboratory
11. Iradiation protection in children and neonates
12. Industrial applications of radiation
13. Major nuclear accidents and radioactive corpses. Reduction of doses from radiological examinations, factors taken into account in the shielding study of an X-ray room.
14. Non ionizing radiation. Dosimetry of non ionizing radiation.
15. Exercises in radiation protection

LABORATORY

1) Introduction in the theory of measurements and observational errors
2) Familiarization with measuring equipment, technical characteristic dose limits, performance and errors
3) Measurement of scatter radiation around a water tank. Dependanve on exposure parameters.
4) Measurement of exposure parameters of X-Ray systems 3phase multi pulse rectification. Taking measurements with exposure factors.
5) Measurement of exposure parameters of X-Ray systems 3phase with 6-peak correction. Taking measurements with exposure factors.
6) Measurement of exposure parameters of mobile X-Ray systems. Taking measurements with exposure factors.
7) Measurement of exposure parameters of mammography. Taking measurements with exposure factors on a mammography phantom.
8) Evaluation and use of the performed measurements
9) Theoretical evaluation of doses in Nuclear medicine
10) Theoretical evaluation of doses in Interventional Radiology
11) Visit the Greek Atomic Energy Commission
12) Visit Hospitals

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>Face to face in the classroom and in hospital training</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice,</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>40</td></tr></table></td></tr>
</table>

fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. *The student's study hours for each learning activity are given as well as the hours of nondirected study according to the principles of the ECTS*	Laboratory Exercise 30 Laboratory report 20 Scientific Visits 10 Self -Study 50 Course total **150**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Essay questions 0.6 Laboratory reports 0.4

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1. Κωνσταντίνος Κάππας Κική Θεοδώρου, *Ακτινοβολίες και Ακτινοπροστασία*, BrokenHill, 2017, ISBN 978-9863-258-80-2
2. Π. Κυπαρισσιάδης*Βασικές Αρχές Ακτινοβιολογίας*,Εκδόσεις Παρισιάνου Α.Ε, 2008 ISBN: 978-960-394-447-5

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3. *NCRP Reports*. Bethesda, Md: National Council on Radiation Protection and Measurements.
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5. Meistrich ML. *Radiation Protection Guidance*. Bethesda, Md: National Council on RadiationProtection and Measurements; 2000.ISBN 0929600657
6. Mettler FA. *Medical Effects of Ionizing Radiation.* 2nd ed. Philadelphia, Pa: WB Saunders; 1995. ISBN 0721666469
7. Martin - S. Harbison *Radiation Protection* Chapman and Hall
8. Bushong, S. *Mosby's Radiography Online: Radiobiology and Radiation Protection.* 8th ed. St. Louis, Mo: Mosby; 2004. ISBN-10: 0323032583 and ISBN-13: 978-0323032582

COURSE OUTLINE

1.GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7251	**SEMESTER**	7th
COURSE TITLE	**SPECIALIZED APPLICATIONS OF COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING – HYBRID IMAGING TECHNIQUES**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	2	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://bisc.uniwa.gr/

2. LEARNING OUTCOMES

Learningoutcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

ConsultAppendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

Upon successful completion of the course the student will be able to:

- produce the best possible image quality and implement low dose CT protocols
- understand the applications of image processing in the imaging of blood vessels, intestine, etc.
- cooperate with the physician who performs interventional procedures
- implement protocols for dynamic imaging of solid organs, brain etc.
- understand the applications of quantitative computed tomography
- understand the rationale behind tissue contrast protocols and imaging levels
- become familiar with the anatomical image at multiple levels on specific MRI applications
- become familiar with pathological images resulting from these techniques

Aim of the course: The aim of the course is to promote and expand the knowledge and skills

of the students in imaging with Computed Tomography and MRI by presenting the specialized applications of the methods and analyzing the additional knowledge required by the radiologic technologist. Scanning parameters, vascular imaging techniques, heart imaging, bowel imaging, dynamic and quantitative imaging, dual energy imaging, radiotherapy plan design, 3D preoperative planning, interventional techniques with computed tomography guidance are analyzed. Another aim of the course is to promote the understanding of how to configure imaging sequences in order to reduce technical errors and optimize the image produced.

Course objective:

The student to be able to formulate special examinations by understanding the reasons that lead to specific choices

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Self work
- Teamwork
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

1. Developments in computed tomography systems (CT over 64 series of detectors, dual source CT, electron beam CT, C-arm imaging technique with flat panel detector)
2. Analysis of the scan and reconstruction parameters and how they affect the image quality (noise, contrast, spatial resolution) so that the diagnostic image is produced with the lowest possible dose
3. Special image processing techniques (3D, MPR, etc.) and virtual computed tomography
4. Illustration of vessels (arteries, veins), heart, coronary arteries, image processing
5. Imaging of the small and large intestine and dynamic (perfusion) imaging of solid organs and brain
6. Quantitative computed tomography (QCT) techniques - dual energy imaging
7. Computed tomography-guided interventions (biopsies, drainage and local tumor treatment (radiofrequency ablation, cryotherapy, microwave application, alcohol infusion and radiotherapy plan design)
8. Special issues of radiation protection in multislice computed tomography Magnetic angiography of the CNS
9. Spectroscopy, functional MRI, diffusion - perfusion sequences in the CNS
10. Multiparametric prostate magnetic resonance imaging
11. Special examinations of the musculoskeletal system
12. Magnetic enteroclysis-enterography, magnetic cholangiopancreatography, Magnetic urography and Magnetic angiography of the body
13. Cardiovascular imaging - examination timing applications (triggering - ECG or pulse gating - respiratory compensation)
14. Hybrid Techniques (PET-CT, PET-MRI, MRI-US etc)

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>In the classroom</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Power point Presentations

E - CLASS</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>30</td></tr><tr><td>Self -Study</td><td>60</td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION</td><td></td></tr>
</table>

Description of the evaluation procedure *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, ope nended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam(100%) that includes: – Essay Questions – Multiple Choice Test – Short Answer Questions

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1. Αλειφερόπουλος Δ. ***Αξονική Τομογραφία***. Λίτσας, 2003. ISBN:906-372-073-9
2. Hofer M. ***Διδακτικό Εγχειρίδιο Υπολογιστικής Τομογραφίας***. Παρισιάνου.Ε., 2004 ISBN: 960-394-265-0
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Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

9.5.5 8th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8211-8212	**SEMESTER**	8th
COURSE TITLE	**NUCLEAR MEDICINE II**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	8
Hospital placement	6	

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC232/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

THEORY

On completion of the course the student will know:

- Basic principles of anatomy and the gross pathological physiology of all systems of the body. (for understanding the mechanisms of uptake).
- The factors affecting the uptake of each radiopharmaceutical by body system
- Good use and control of the gamma Camera - (conventional or SPECT) with single or multiple collimators – together with good use of computers (PCs).
- a. Basic projections (exposures) per system. – Image processing
  b. Additional exposures per pathological case which will be performed under the guidance of the physician.
- Basic knowledge of PET/CT
- Receive simple (mini) medical history.
- Preparation of radiopharmaceuticals in Hot Laboratory.
- Techniques of image recording

- Radiaton protection of the patient –staff- environment

HOSPITAL PLACEMENT

- Detailed knowledge of all equipment and image processing on work station
- Perform all projections per disease.
- Learn to take mini Medical History.
- Ethics and deontology in the Nuclear Medicine Department.
- Storage and removal of old generators (sources). Handling radioactive waste.
- Radiation protection of area and staff.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Respect for difference and multiculturalism
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism

3. SYLLABUS

THEORY

1. Diagnostic and therapeutic applications of radioisotopes in the investigation of the urinary tract. Types of radio pharmaceuticals – Radioisotope uptake – Doses. Patient preparation. Dynamic and static imaging in the normal patient. Investigation of urinary obstruction, hypertensive renovascular disease, acute tubular necrosis, chronic renal failure, tumors vesicoureteric reflux, renal transplantation.
2. Radio pharmaceuticals and imaging techniques for brain diseases - Investigation of cerebrovascular disease, neurodegenerative diseases (dementia, Alzheimer's disease, Parkinson) epilepsy and brain death – radionuclide cisternography.-image interpretation.
3. Radio pharmaceuticals techniques and protocols for imaging the myocardium. Stress and Rest protocols. Preparation and use of imaging equipment. - Types and procedure of pharmacological Stress. - patient preparation -image recording, processing, and interpretation of the results. Radionuclide ventriculography - Clinical applications. Ischemic disease - myocardial infarction- myocardial viability

control.

4. Diagnostic approaches in oncology – Imaging using Ga-67, Tl-201, Tc-99m Sestamibi, I-131 (I-123) MIBG, In-111 Octreotide
5. Proton Emission Tomography. Fusion imaging with Positron emission tomography (PET/CT) – Tracers, Basics of F-18 and C-11Role-^{18}F-FDG –patient preparation-technical characteristics-Image processing- result analysis
6. PET Indications for Oncology (Head and neck Ca -Lung Ca-Breast Ca –Lymphomas – Digestive tract tumors -Brain tumors), paediatric oncology
7. Indications of PET/CT in Neurology
8. Indications of PET/CT in Cardiology

HOSPITAL PLACEMENT

Placement in tertiary referral centers. Training in all details of the preparation of radio pharmaceuticals (in the Hot Lab) and executing scintigraphs of various body organs for investigation of benign and malignant diseases. Role of the Radiographer in the Department of Nuclear Medicine. Cooperation with all staff in the department.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom and in hospital training
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 60 Hospital Placement — 80 Self -Study — 100 Course total — **240**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation,*	*Theory* Written final examination Essay questions *Hospital Placement* Written examination with multiple choice questions

other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1) Γώγου Λ. ***18F-FDG PET***.Εκδόσεις Σταμούλη 2004. ISBN 9603515280

2) Γώγου Λ**.** ***Μαθήματα*** *Πυρηνικής Ιατρικής.* Εκδόσεις Σταμούλη 2014. ISBN 978-960-351-954-6

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18) Dierckx R et al ***PET and SPECT in Psychiatry***, Springer 2014

19) Dierckx R et al ***PET and SPECT in Neurorogy***, Springer 2014

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8221	**SEMESTER**	8th
COURSE TITLE	**NUCLEAR MEDICINE THERAPIES**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	2	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC232/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

The student should achieve:

- familiarity with the therapeutic potential of radioisotopes in various malignant diseases
- familiarity with the therapeutic potential of radioisotopes in benign situations.
- knowledge of the technical characteristics of each method- Study of radiation protection
- knowledge of the kinetics of radio pharmaceuticals.
- familiarity with the treatment of pain. - Role of the Radiographer in the support team and monitoring group.

Nuclear Medicine Therapies are types of selective radiotherapy allowing radiation treatment with the least damage to the surrounding normal tissues. The aim of the course is to present students with the most recent types of treatment.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Respect for difference and multiculturalism
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism

3. SYLLABUS

1. The role of I-131 in the treatment of differentiated thyroid cancer – indications for ablation treatment. Patient preparation – dose – dosimetry–radiation protection after treatment – stunning effect –the role of recombinant TSH [rhTSH] –treatment side effects.
2. Benign thyroid diseases suitable for I 131 treatment. Hyperthyroidism, Graves disease, thyroid opthalmopathy, multinodular goiter, autonomous adenoma-treatment side effects- dosimetry.
3. Radio hymenolysis – choice of radiopharmaceutical – action mechanism, dosimetry, side effects. The role of Y-90 Citrate, Erb 169 Citrate, Re 186 Sulfide. Assessment of treatment results.
4. Pain relief. Painful bone matastaseis, pain management, the ideal patient for treatment. Biologic characteristics of the radiopharmaceutical, clinical applications Sr 89 Chloride, Re 186 HEDP, Sm 153 EDTMP, toxicity, clinical experience, contra indications.
5. Treatment with I 131 MIBG, mechanism of uptake, indications, patient selection, patient preparation, care and side effects in pheochromocytoma, neuroblastoma, carcinoid and medullary thyroic cancer.
6. Treatment with somatostatin receptor targeted radiopeptides in the classic NET tumors and hepatocellular cancer. Patient preparation, patient selection, dose, dosimetry.
7. Treatment of malignant collections: intraabdominal, pleural, intracystic, intraarterial
8. Radio immunotherapy and lymphoma. Patient selection criteria, dose, dosimetry, treatment effectiveness, radiation protection.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY

Face-to-face, Distance learning, etc</td><td>Face to face in the classroom and in hospital training</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>30</td></tr><tr><td>Self -Study</td><td>60</td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory
Written final examination
Essay questions</td></tr>
</table>

5. **RECOMMENDED** BIBLIOGRAPHY

GREEK

1) Γώγου Λ. *Θεραπεία με Ραδιοφάρμακα.* Εκδόσεις Σταμούλη 2007. ISBN 9789603517245

ENGLISH

2) Schlumberger M - Pacini M *Thyroid Tumors* Nucleon 1999
3) *Biological effects of Low-Level Radiation* (IAEA Vienna) (1983)
4) D.A.Podoloff *Monoclonal Antibody Therapy* Nucl. Med. Ann., 1994
5) Harbert - Ziessman *Therapy with Intraarterial Microspheres*, 1987
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8) Mödder G. *Radiosynoviorthesis: Involvement of nuclear medicine inrheumatology and Orthopedics*, Meckenheim, 2001
9) Aktolun C et al Nuclear Medicine Therapy Springer 201

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8231	**SEMESTER**	8th
COURSE TITLE	**RADIOLOGIC PATHOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	4

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC212/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

ConsultAppendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

The student should comprehend:

- the radiological findings of important diseases.
- the need for optimization of the imaging method for demonstrating the pathology in the best possible way
- the main imaging protocols for investigating specific diseases / symptoms and to assist in their implementation
- the need to possess skills to identify illnesses that require immediate treatment and to inform the radiologist promptly

The aim of the course is to present the students with medical conditions in conjunction with imaging characteristics. To familiarize the student with the algorithms for investigating major clinical symptoms and to help them understand the rationale of evidence based practice in diagnostic imaging.

The student should recognize gross pathology of the main diseases in the body that are depicted on images. To understand what is requested in each examination depending on the patient's pathology and to adjust to the examination protocol. To be aware which information is relevant from the patient's history (clinical and imaging) so that the

examination carried out yields the greatest benefit to the patient.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Working independently
- Working in an interdisciplinary environment new research ideas
- Respect for difference and multiculturalism
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism

3. SYLLABUS

Presentation of major congenital disorders, inflammatory and neoplastic diseases per body system. Also particularities of imaging per system and the investigative algorithms of the main clinical symptoms / disorders.

1. Upper respiratory tract
2. Lower respiratory tract
3. Cardiovascular system
4. Digestive System I (intestine)
5. Digestive System II (liver, bile ducts, pancreas, spleen)
6. Dynamics of the peritoneal cavity
7. Urinary system
8. Reproductive system
9. Endocrine system
10. Nervous system
11. Haematopoietic system
12. Musculoskeletal system
13. Trauma
14. Therapeutic interventional procedures in the Imaging Department

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom

<table>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Self -Study</td><td>75</td></tr><tr><td>Course total</td><td>120</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory
Written final examination
Essay questions</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1) Αργυροπούλου, Γουλιάμος, Δρεβελέγκας, Καραντάνας, Κελέκης, Πρασσόπουλος, Σιαμπλής, Τσιαμπούλας, Φεζουλίδης. ***Κλινική Ακτινολογία***. Εκδόσεις Ι. Κωνσταντάρας, 2012, ISBN 960-680-238-6
2) Π.Ο.Υ. 1990. ***Διαγνωστική Απεικόνιση: επιλογή μεθόδων στην κλινική πράξη***. Εκδόσεις Βήτα 1992. ISBN 9607308220
3) Δ. Κελέκης. ***Επεμβατική Ακτινολογία***. Ι Κωνσταντάρας 2014. ISBN 9789606802409
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6) EisenbergRL, JohnsonNM. ***Comprehensive Radiographic Pathology***. 4th ed.

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Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8241-8242	**SEMESTER**	8th
COURSE TITLE	**RADIATION ONCOLOGY III – COMBINATION THERAPIES IN ONCOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	4	9
Hospital placement	6	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE / COMPULSORY	
Prerequisite Courses		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC216/	

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

THEORY

On completion of the course the student will be able to:

- know the different types of radiotherapy equipment and how to use it
- know the basics of medical oncology
- know the purpose of the applied radiotherapy treatment
- know the routes of tumor spread and how to apply treatment for palliation or therapy
- know in depth the particular issues relating to modern radiotherapy treatments in order to participate safely and effectively in treatment application and research

The student should be familiar with:

- the available treatment methods
- the effects and side effects of treatment on the patient's general condition
- the timing and the time intervals between treatments
- the progress in disease prevention, diagnosis and treatment and the availability of

alternative methods in treating malignant diseases.

HOSPITAL PLACEMENT

The aim is for the student to understand, familiarize and practice teletherapy treatment planning as well as to understand the extended role of the radiotherapy technologist, their duties and responsibilities.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Adapting to new situations
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Respect for difference and multiculturalism
- Showing social, professional and ethical responsibility and sensitivity to gender issues
- Criticism and self-criticism
- Production of free, creative and inductive thinking

3. SYLLABUS

THEORY

1. Prostate cancer: introduction, epidemiology, etiopathogenesis, symptoms, clinical picture, clinical staging, TNM, Gleason score, diagnosis, radiotherapy, interstitial application in combination with external beam radiotherapy, side effects and complications of radiotherapy. Biopsy reassessment following radiotherapy, dealing with local recurrence and palliative radiotherapy, prognosis, hormonal therapy in prostate cancer (introduction, estrogens, orchiectomy, LHRH analogues, anti-androgens, adrenalectomy, total androgenic blockage, anti-prolaktin factors, progesterone)
2. Malignant tumours of the penis, testicular malignant tumors (epidemiology, symptoms - clinical picture – routes of spread, etiopathogenesis, clinical staging, istopathologoanatomical classification, diagnosis, radiotherapy)
3. Malignant neoplasms of skin: introduction, skin cancer, basal cell carcinoma and treatment, squamous cell carcinoma, squamous cell carcinoma specific positions, benign diseases of the skin. Malignant melanoma: introduction, nevus of Spitz, Dysplastic nevus of Clark, nevus of Reed, melanoma local recurrence, expanding

superficial melanoma, melanoma type lentigo, malignant melanoma of the extremities, nodular melanoma, melanoma etiogenetical factors. Melanoma: treatment (surgery, radiotherapy, chemotherapy, immunotherapy, hormone therapy)

4. Bone and soft tissue sarcomas: bone tumors (introduction, epidemiology, etiology, clinical staging, malignant bone tumors, malignant synovioma joints, clinical manifestations and diagnosis, metastatic spread, prognosis, therapy, osteosarcoma, chondrosarcoma, malignant histiocytoma of bones, giant cell bone sarcomas, Ewing sarcoma). Soft tissue sarcomas (introduction, epidemiology, etiology, clinical manifestations and diagnosis, differential diagnosis, staging and prognosis, treatment, radiation therapy, patient care.
5. Malignant neoplasms in children: the size of the problem, the role of radiotherapy in childhood oncology, general principles of radiotherapy in children, leukaemia in children, brain tumors in children, brain tumour radiation therapy (posterior fossa tumours, astrocytomas, medulloblastomas and planning technique of the CNS, brain stem gliomas, choroid plexus papillomas and cerebral ventricles, supratentorial tumors: astrocytomas, pituitary tumours, pineal tumors, oligodendrogliomas, meningiomas, Hodgkin's disease in children, non-Hodgkin lymphomas of children, neuroblastoma, nephroblastoma or tumour of Wilms, rhabdomyosarcoma children, bone and soft tissues sarcomas of children (osteosarcoma, Ewing sarcoma, giant cell tumor, histiocytosis).
6. Lymphoma: Hodgkin disease (epidemiology, diagnosis, disease assessment scale, classification-staging, prognostic factors, factors that affect therapeutic choice, therapeutic principles, and the problem of laparotomy, radiotherapy planning techniques, therapeutic indications, complications of treatment, outcomes and follow-up. Non-Hodgkin lymphoma (epidemiology, pathophysiology and classifications, diagnosis, assessment of the extent of disease, staging prognostic factors, chemotherapy and combined treatments, basic therapeutic principles, radiotherapy.
7. Leukaemia and other haematological diseases: Acute leukaemia (epidemiology, etiopathogenetic factors, symptoms, diagnostic access, natural history, prognosis of treatment- general principles, the role of radiotherapy and the problem of meningeal relapse).
8. Leukaemia and other haematological diseases: Acute leukaemia (role of radiotherapy techniques and results of radiotherapy). Secondary leukaemia and myelodysplastic syndromes, chronic leukemias and myeloproliferative diseases, multiple myeloma.
9. Metastatic disease: introduction, epidemiology, etiology, lymphatic spread, haematogenous spread, spread by implantation, staging, therapy, brain metastases (clinical picture, laboratory tests, treatment). Metastatic disease: bone metastases (introduction, clinical picture, laboratory tests, diagnosis and therapy. General principles of chemotherapy of malignant neoplasms, short history review of cancer chemotherapy, antineoplastic drugs - action toxicity).
10. From prevention to treatment of the commonest malignancies like, breast cancer, lung cancer, colon cancer, melanoma, female reproductive system cancers.
11. Emphasis is given on the therapeutic approaches with combination of anticancer therapies, such as surgery, radiotherapy, chemotherapy, hormonal therapy, immunotherapy and gene therapy. Moreover, knowledge is given to the students about the rescue of organs by combining oncological therapies and they become aware of the combination of different drugs, used in daily practice
12. Chemotherapy drugs and hormone therapies used in everyday practice. Toxicity resulting from each treatment separately as well as from the combination of

oncological therapies particularly.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom and in hospital training
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 50 Hospital Placement — 80 Self -Study — 110 Course total — **240**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	*Theory* Written final examination Essay questions *Hospital Placement* Written examination with multiple choice questions

5. RECOMMENDED BIBLIOGRAPHY

GREEK

1) Τσακίρης Γ, Θρουβάλας Ν, Κύργιας Γ. ***Ακτινοθεραπευτική Ογκολογία*** Τόμος Β. Εκδόσεις Λίτσας 2000. ISBN:960-372-028-3set

2) Κοσμίδης Π, Τσακίρης Γ. ***Ογκολογία – Ραδιοβιολογία***. Εκδόσεις Λίτσας 2003. ISBN:960-372-069-0

ENGLISH

3) Perez C, Brady L. ***Principles and practice of Radiation Oncology***. Lippincott Williams Wilkins, 2004. ISBN-10: 0781763691
4) Cox JD. ***Moss' Radiation Oncology: Rationale, Technique, Results***. 8th ed Mosby, 2003. ISBN 032301258

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8251 (5a)	**SEMESTER**	8th
COURSE TITLE	**UNDERGRADUATE THESIS (DISSERTATION)**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLYT EACHING HOURS**	**CREDITS**
			6
Add rows if necessary. The organization of teaching and the teaching Methods used are described in detail at (d).			
COURSE TYPE *general background, special background,specialized general knowledge, skills development*	SC/CE (SPECIALIZATION COURSE / COMPULSORY ELECTIVE		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	..		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim the Undergraduate Thesis course is for the students to

1. Improve their ability to look into a problem

2. Improve learning through study and the thorough analysis of the gathered information on a specific subject as well as increase knowledge through guided and independent study

3. Improve students' ability to analyze and provide a complete and documented solution in a problem

4. Improve their ability to search, to look into, process and use information from literature sources

5. Improve skills in writing and presenting on a subject supported by effective use and understanding of the literature referred

6. Improve writing skills on subjects that require scientific methodology, presentation of views and making statements, development of new ideas and towards different directions and generally managing to process any narrative of scientific interest that will disseminate own views, scientific ideas and proposals.

General Competences *Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?*	
Search for, analysis and synthesis of data and information, with the use of the necessary technology *Adapting to new situations* *Decision-making* *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Project planning and management* *Respect for difference and multiculturalism* *Respect for the natural environment* *Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Autonomous work
- Work in an interdisciplinary environment
- Team work
- Production of new research ideas
- Production of free, creative and inductive thinking
- Adapting to new situations

3. SYLLABUS

The preparation of the thesis is split in three parts:

1. Collection of the necessary information, study of the relevant to the thesis subject current literature

2. Experimental part, if such a part is included

3. Writing up of the thesis in a text that will present the results and the scientific views well documented according to the literature and / or the results of the experimental work.

The value of the thesis does not depend on the number of pages, though a minimum size should be proposed. It is easier to use a minimum number of words in order to include all important information.

Specifically, 20.000 words is the minimum number of words in the proper text not including bibliography, drawings, tables etc. Very specialized subjects may be covered in a smaller number of words. The supervisor of the thesis may decide whether the subject has been covered satisfactorily.

Of higher value compared to the number of words is understandably the quality of the work that has been done by the student and this criterion prevails in the assessment of the Undergraduate Thesis.

Finally, every student, should work on a subject relevant to the studies content of the sector of Radiologic Technology which will come up during professional and scientific practice after graduation.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Writing up and regular contact with the supervisor
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, Communication with students*	Use of electronic technology for the presentation of the work in the classroom and literature search
TEACHING METHODS *The manner and methods of teaching are described In detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Search and Analysis of bibliography	45
Elaboration of thesis	45
Writing up thesis	45
Self study	45
Course total	**180**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Oral examination with public presentation **1.** Correctness and validity of the thesis content (60%) **2.** Completeness of literature search (20%) **3.** Presentation (10%) **4.** Innovative elements and research prospects (5%) **5.** Correct use of language (5%)

5. RECOMMENDED BIBLIOGRAPHY

1. ***How to write and publish a scientific paper***.– 2016, Greenwood***.***
2. ***How to write a paper*** GM Hall, Z Sestak – 2003, Willy Blackwell***.***
3. ***Analyzing the Past to Prepare for the Future: Writing a Literature Review.*** Jane Webster and Richard T. Watson. ***MIS Quarterly*** Vol. 26, No. 2 (Jun., 2002), pp. xiii-xxiii

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8261	**SEMESTER**	8th
COURSE TITLE	**HYBRID IMAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/CE SPECIALIZATION COURSE / COMPULSORY ELECTIVE
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

After the end of the course the student will be able to:

- know the modern applications of medical imaging which involve fusion of images derived from different modalities and the coupling of information with the relevant software
- understand the complementary of imaging modalities and the different type of information offered by each one of them functional and anatomical
- know which are the indications for fusion imaging currently and the evolving future trends

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

— *Search for analysis, synthesis of data* — *Project planning and management*

information with the use of the necessary technology — *Adapting to new situations* — *Decision-making* — *Working independently* — *Team work* — *Working in an international environment* — *Working in an interdisciplinary environment new research ideas*	— *Respect for difference and multiculturalism* — *Showing social, professional and ethical responsibility and sensitivity to gender issues* — *Criticism and self-criticism* — *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Working independently
- Team work
- Working in an interdisciplinary environment
- Production of new research ideas
- Production of free, creative and inductive thinking

3. SYLLABUS

1. The philosophy of hybrid imaging and the meaning of molecular imaging
2. Specific equipment requirements of hybrid imaging systems PET/CT
3. The role of the radiologic technologist in the de4partments of hybrid imaging
4. SPECT/CT
5. MRI/PET
6. MRI/SPECT
7. Ultrasound? MRI
8. MRI/CT
9. Clinical Applications
10. Future trends

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical*	*Activity* / *Semester workload* Lectures-Presentations using audiovisual media. — 45 Self -Study — 45

practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. *The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS*	Course total: **90**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final examination Essay questions Multiple choice questions Short answer questions

5. **RECOMMENDED** BIBLIOGRAPHY

1. ΓώγουΛ. ***18F-FDG PET***.Εκδόσεις Σταμούλη 2004. ISBN 9603515280
2. Ζάγκλης Α. ***Στοιχεία Ραδιοφαρμακολογίας***. Εκδόσεις Λύχνος 2005.
3. Κανδαράκης Ι. ***Πυρηνική Ιατρική***. Εκδόσεις Αράκυνθος 2007.
4. https://e-class.teilar.gr/modules/document/file.php/IE105/PET-CT.pdf
5. European Journal of Hybrid Imaging

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8271 (5b)	**SEMESTER**	8th
COURSE TITLE	**MUSCULOSKELETAL AND CARDIOVASCULAR SYSTEM IMAGING**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/CE SPECIALIZATION COURSE /COMPULSORY ELECTIVE
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

After the end of the course the student will know:

- The modern methods of musculoskeletal imaging
- The principles that govern protocol design in musculoskeletal imaging
- The advanced anatomy necessary for imaging the diseases of the musculoskeletal system
- The commonest pathological conditions of the musculoskeletal system and imaging algorithms

The student will also know:

- The specific techniques and the modern developments in the imaging of the cardiovascular system
- The issues relating to temporal resolution and the methods used in cardiovascular imaging
- The ECG basics and the need for ECG synchronization and gating
- The main abnormal conditions of the cardiovascular system

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Search for analysis, synthesis of data information with the use of the necessary technology
- Working independently
- Team work
- Working in an interdisciplinary environment
- Production of new research ideas
- Production of free, creative and inductive thinking

3. SYLLABUS

1. Methods of imaging the musculoskeletal system
2. Trauma
3. Non trauma diseases of the musculoskeletal system
4. Orthopaedic implants
5. Basic principles of musculoskeletal imaging with MRI
6. Imaging of the joints
7. Ultrasound applications in MSK imaging
8. Ultrasound application in cardiovascular imaging
9. Angiography
10. Nuclear Medicine – cardiovascular applications
11. CT imaging of the coronaries and the mai vessels
12. MRI – technique in cardiovascular imagi8ng
13. MRI – imaging of anatomy, function, perfusion
14. MRA of the coronary arteries and other body vessels

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars

<table>
<tr><td></td><td>relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>45</td></tr><tr><td>Self -Study</td><td>45</td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final examination

Essay questions
Multiple choice questions
Short answer questions</td></tr>
</table>

5. **RECOMMENDED** BIBLIOGRAPHY

1. Jamshid Tehranzadeh. ***Απεικόνιση Μυοσκελετικού***. Εκδόσεις Κωνσταντάρας 2015, **ISBN:** 9789606802898

2. Καραντάνας Α. ***Απεικόνιση Αθλητικών Κακώσεων***. Εκδόσεις Κωνσταντάρας, 2010, **ISBN:** 9789606802102

3. Ανδρέου Ι., Γουλιάμος Αθ. ***Αξονική Στεφανιογραφία***. Εκδόσεις Κωνσταντάρας, 2010, **ISBN:** 9789606802195

4. Δημήτριος Αν. Κελέκης. ***Επεμβατική Ακτινολογία***. Εκδόσεις Κωνσταντάρας, 2014, **ISBN:** 9789606802409

5. Thelen Erbel Barkhausen Kreitner. ***Cardiac Imaging. A Multimodality Approach***. Thieme 2009. ISBN: 9783131477811

Related academic journals

European Journal of Radiology. https://www.ejradiology.com/
Radiographics. https://pubs.rsna.org/journal/radiographics
Radiology. https://pubs.rsna.org/journal/radiology
The Radiology Assistant. https://radiologyassistant.nl/
Radgmagazine. www.radmagazine.co.uk

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	RADIOLOGY AND RADIOTHERAPY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8281 (5d)	**SEMESTER**	8th
COURSE TITLE	**SPECIALIZED MEDICAL APPLICATIONS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	**3**	**3**
Laboratory	------	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	SBC/CE SPECIALIZED BACKGROUND COURSE /COMPULSORY ELECTIVE
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC194/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.
Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

After completing the course the student will be able to:

- know about the technological advances and minimally invasive procedures available in

everyday practice in order to minimize the risks of surgery, the suffering and the length of hospitalization and at the same time improve procedure safety and precision.

The scope the course is to demonstrate the developments of technology during the late 20th and early 21st centuries which brought a revolution to the treatment of patients, by using surgical and endoscopic techniques, based exclusively upon new technologies.

The aim of the course is to introduce endoscopies, minimal invasive procedures and the applications of new technology in the classical laboratory and radiology techniques.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

3. SYLLABUS

(1) Endoscopic techniques in in digestive and respiratory system Use of EUS
(2) Laparoscopic procedures (for diagnosis and treatment)
(3) Thoracoscopic procedures (for diagnosis and treatment)
(4) Diagnosis and treatment of cardiovascular diseases in the haemodynamic laboratory
(5) Cardiac surgery operations
(6) Endoscopic vascular techniques
(7) Endoscopic techniques for orthopedic diseases
(8) Endoscopic techniques for urological diseases
(9) Neurosurgical minimal invasive techniques
(10) Minimal invasive techniques for patients with malignant oncologic diseases
(11) New technologies and children
(12) The patient in the I.C.U.
(13) The benefit from the use of new technologies

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall. Use of distance learning methods (use of MS TEAMS)
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory*	• Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation

<table>
<tr><td>education, communication with students</td><td>• Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly
• Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), questionnaires, tutorials, information for congresses and seminars attendance related to the course and, study and analysis of bibliography.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures (Use of I.C.T.). Contributions and Lectures with the use of audiovisual instruments.</td><td>45</td></tr>
<tr><td>Essay writing
Self study</td><td>45</td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other
Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>• Multiple choice questionnaires,
• Short-answer questions,
• Open-ended questions
• Essay
• Oral examination</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

1. L.Gogou, G. Tsakiris, N.Thalassinos, Fr. Anthouli-Anagnostopoulou, M. Venetikou: Medical Specialties and new Technologies (collective work). Broken Hill Publishers, 1st edition, Nicosia 2017
2. J. Murtagh: General Medicine. Broken Hill Publishers, 2 nd edition, Nicosia 2011

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	Medical Laboratories		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	**8282(5e)**	**SEMESTER**	8th
COURSE TITLE	**NUTRITION AND HEALTH**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SBC/CE SPECIAL BACKGROUND COURSE / COMPULSORY ELECTIVE
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC142/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

After successful completion of the course the student will be able to:

- know about nutrition and nutrition education through life in order to maintain and promote health.
- know about the methods and techniques for the evaluation of nutritional status, handling body weight as well as the analyses and writing up of diet plans
- contribute in the diagnosis of diseases relating to dietary habits, eating disorders and food relating risks
- understand dietary models, claims regarding nutrition and health, the interactions between medicines and food and the methods of research in relation to nutrition
- appreciate new dietary trends and knows the role and their importance.

The aim of the course is for the students to understand the basic principles about nutrition, the importance of the nutrients and the energy metabolism during the life cycle of the human. To know the current dietary models, the new dietary trends and dietary risks. To know how to evaluate the nutritional status of a patient clinically and with laboratory tests

as well as the interventions for the prevention and treatment of nutrition related diseases. To learn the basics about making up and analyzing a diet plan, food safety, nutrition research and nutrition education.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Decision making
- Working independently
- Working in an interdisciplinary environment
- Producing new research ideas
- Project planning and management
- Respect for difference and multiculturalism

3. SYLLABUS

1. Introduction. Relation between Nutrition and Health. Nutrition Education
2. Nutrients. Food groups. Equivalent food and feed. Digestion. Metabolism. Rating energy needs and balance. Normal body weight.
3. Nutrition evaluation. Assessment of nutritional status. Anthropometry
4. Principles diet. Diets. Analysis of dietary patterns. Nutritional information
5. Nutritional standards. Mediterranean diet. Claims about nutrition and health
6. Consumer and food. Precepts of food preparation and consumption
7. Food Safety and Health. Dietary risks. HACCP.
8. Nutrition during the life cycle. Nutrition and Exercise. Nutrition and aesthetics
9. Nutrition related diseases. Eating disorders
10. Food-Drug interactions. Alcohol. Food additives
11. New nutrition trends (organic – genetically modified – functional foods – nutraceuticals). Food supplements and products for specialized dietary needs
12. Metabolic syndrome. Obesity. Weight management.
13. Nutrition research methodology. Nutrigenomics. Nutrigenetics.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS	Use of ICT for teaching. Use of email and department site

<table>
<tr><td>TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>120</td></tr><tr><td>Self -Study</td><td>60</td></tr><tr><td>Course total</td><td>180</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final examination:

Essay questions
Multiple choice questions
Short answer questions</td></tr>
</table>

5. **RECOMMENDED**BIBLIOGRAPHY

1. Χανιώτης Δ. Διατροφή και Υγεία. Ιατρικές Εκδόσεις Λίτσας, 2014. (Εύδοξος:41955717)

2. Krause's*Κλινική Διατροφή*. Ιατρικές Εκδόσεις Λίτσας, 2012.

3. Πλέσσα Σ. Διαιτητική του Ανθρώπου. Εκδόσεις Φάρμακον Τύπος, 2010

4. Κατσιλάμπρος Ν. Κλινική Διατροφή. Εκδ. Βητα 2010.

5. BiesalskiHK., GrimmP. Εγχειρίδιο Διατροφής. BrokenHillPubl. Ltd ,2008.

6. EFSA. Ευρωπαϊκή Αρχή για την Ασφάλεια των Τροφίμων (EFSA. Διαθέσιμο στο:http://www.efsa.europa.eu

7. Ανώτατο Ειδικό Επιστημονικό Συμβούλιο Υγείας. Διατροφικές οδηγίες για ενήλικες στην Ελλάδα. Ανώτατο Ειδικό Επιστημονικό Συμβούλιο Υγείας καιΠρόνοιας, Αθήνα (Διαθέσιμο στο: Αρχεία Ελληνικής Ιατρικής 1999, 16(6):615-625).

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	Medical Laboratories		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	**8283 (5f)**	**SEMESTER**	8th
COURSE TITLE	**AGING AND LONGEVITY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	3

COURSE TYPE *general background, special background, 585pecialized general knowledge, skills development*	SBC/CE SPECIAL BACKGROUND COURSE / COMPULSORY ELECTIVE
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.teiath.gr/courses/TIE124

2. LEARNING OUTCOMES

Learningoutcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

The course offers knowledge and skills related to the biological basis of aging and longevity and the protection of the elderly. During the course we examine the parameters and the conditions that will allow for a personal and family environment safeguarding active and healthy aging.

The scope of the course is for the students to understand the biological mechanisms and the parameters of aging, to recognize the normal aging process, quality life and longevity, to know about geriatric syndromes, their symptoms, management and treatment.

The aim of the course is to make the student able to understand the abilities and their contribution towards a healthy environment and way of living, in the protection of the elderly with emphasis in self-care practices, in maintaining independence, in voluntary actions, in embracing activities and attitudes supporting physical and psychological health, in improving family environment, in providing information and connectivity with official or unofficial supportive services.

After the end of the course the student will be able to:

- understand the risk factors, the biological and psycho social parameters involved in aging and longevity
- know about specific to the elderly health problems

- evaluate issues relating to the health and care of the elderly plan and implement actions in order to protect the elderly
- use evaluation methods and tools for the assessment of their needs
- can work in team or independently in the health and care services in order to serve the elderly
- offer advice and educate on health issues aiming to healthy and active aging.
- provide health care services in the entire spectrum related to the elderly in the community and its health structures.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility and sensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Decision making
- Working independently
- Working in an interdisciplinary environment
- Producing new research ideas
- Project planning and management
- Respect for difference and multiculturalism

3. SYLLABUS

1. Morphological, neurochemical and clinical findings of aging
2. Definition and the meaning of aging and longevity. Theories of aging. Telomeres
3. Aging of the population and impact. Demography – Epidemiology
4. Healthy and active aging. Volunteerism. The importance of retirement
5. Zones of longevity. Lifestyle.
6. Risk factors. Physical activity. Falls. Vaccinations
7. Dietary issues in the elderly. Malnutrition. Sarcopenia.
8. Medical History of Elderly Patients. The Basics of Geriatric Pharmacology
9. Geriatric syndromes. Frailty syndrome. Somatopause. Debilitation
10. Sexuality and the elderly. Incontinence.
11. Dementia. Psycho social problems
12. Stress and psychological health. Anxiety and Depression in the elderly.
13. Services – Organizations – Institutions. Health care facilities for the elderly.

4. TEACHING and LEARNING METHODS – EVALUATION

DELIVERY	Face to face in the classroom

<table>
<tr><td>Face-to-face, Distance learning, etc</td><td></td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>80</td></tr><tr><td>Research paper writing</td><td>60</td></tr><tr><td>Self -Study</td><td>40</td></tr><tr><td>Course total</td><td>180</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other
Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final examination

Essay questions
Multiple choice questions
Short answer questions</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

1. Χανιώτης Φ., Χανιώτης Δ. ***Γηριατρική***. Ιατρικές Εκδόσεις Λίτσας, 2013.(Εύδοξος: 22769283)

2. BeersMarkH.,JonesThomasV. Merck***Εγχειρίδιοηυγείαστην Ζηηλικία***. Εκδόσεις Broken Hill Publishers LTD, 2007.3. Markides SK. Health and Aging. SAGE Publ. USA, 2007

3. Chernoff R. ***Geriatric Nutrition***. Jones &BartletPubl.USA, 2006

4. Kagawa Y. ***From clock genes to telomeres in the regulation of the health span.*** Nutrition Reviews; 2012, 70(8):459-471

5. Haber D.***Health promotion and aging. Practical applications for health professionals***. Springer Publishing Company. New York, 2010.

6. Naaldenberg J. ***Healthy aging in complex environments. Exploring the benefits of systems thinking for health promotion practice***. Wageningen University, The Netherlands, 2011

9.6 Division of Medical Laboratories Science- Courses outline

9.6.1 4th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	OF HEALTH AND CARE SCIENCES			
ACADEMIC UNIT	BIOMEDICAL SCIENCES			
LEVEL OF STUDIES	MEDICAL LABORATORIES			
COURSE CODE	4031-4032	**SEMESTER**	4th	
COURSE TITLE	BIOCHEMISTRY II			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHIN GHOURS**	**CREDITS**
Theoretical lessons			3	5
Laboratory lessons			2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special Background			
PREREQUISITE COURSES:	None			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes			
COURSE WEBSITE (URL)	https://eclass.teiath.gr/courses/TIE167/			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A Higher Education Area

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

At the end of this course the student will be able to:

- *To know in depth the function of enzymes, what reactions they catalyze and by what mechanism.*
- *To know the kinetics of enzymes, the relevant equations and to be able to utilize with experimental data.*
- *To know the citric acid cycle, its products and the amount energy produced.*
- *To know glycolysis, Kalvin circle, glycogen metabolism*
- *To know fatty acid metabolism*
- *To know the biosynthesis of cholesterol and its chemical derivatives*
- *To know Hormone action.*
- *To know quality methods of identification of carbohydrates, fats and proteins / amino acids.*
- *To know methods of distinguishing amino acids by chromatography methods.*
- *To understand theoretically and experimentally the physical properties of proteins.*

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

At the end of this course the student will have developed the following skills:

- Analysis and synthesis of data and information using necessary technologies.
- Project design and management
- Perform laboratory exercises using complex instruments.
- Work in an interdisciplinary environment.
- Individual work.

3. SYLLABUS

Theoretical lessons

● The structure of the enzymes. Classification and nomenclature of enzymes, reactions that are catalyzed. The Michaelis-Menten equation. The way of calculating V max, Km with experimental data and transformation of the equation.

● Allosteric and synergistic phenomena and related transformations of the Michaelis-Menten equation (Hill model, Adair etc.). The regulation of the action of the hymns, the proteolysis of homogeneous, protein kinase, phosphates, etc.

● The metabolism of proteins / amino acids, Decarboxylation, transaminosis, the oxidative deamination.

● The biosynthesis of essentials amino acids. The deamination and the formation of urea.

● Oxidative decarboxylation and the uric acid cycle.

● The metabolic role of porphyrins and their metabolism.

● Carbohydrate metabolism, glycolysis, gluconeogenesis. The starch and its metabolism. Photosynthesis.

●Lipids metabolism

●The production of steroid hormones, of carotenoids and vitamin D.

●The respiratory chain. Energy storage in membranes. The redox systems of the respiratory chain, the oxidative phosphorylation, the role of cytochromes.

● Hormones: Categories, place of production and mechanism of action, disorders.

Laboratory lessons

The laboratory part of the course includes practice in the following objects:

● Use of devices and instruments - Safety rules in the laboratory.

● Procedure and analytical calculations for laboratory exercise to determine pH of a buffer (initially and after addition of a strong acid or strong base)

● Qualitative determinations of sugars

● Qualitative determinations of amino acids. Titration, calculation of isoelectric point. Determination of pK1, pK2 and the pI of glycine.

● Qualitative assays of proteins. Physicochemical properties of proteins. Precipitation of proteins. Study of the effect of pH, temperature and ionic strength in their solubility.

●Protein Quantification-Bradford Method

● Spectrophotometry. The determination of λmax. The determination of Km, V max of a

enzymatic reaction.

●Thin layer chromatography (TLC) of amino acids using ninhydrin.

●Thin layer chromatography (TLC) of amino acids using UV.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, Communication with students, Teaching through video, Collaboration between students – professors through short assays. Use the e-class for posting and circulation of scientific articles, instructions, lectures, useful links, questionnaires, information on attending conferences and seminars related to the course.

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures-Presentations with use of audiovisual media.	54
Laboratory Exercise in small groups 20-25 students	40
Independent study	20
Course total	*114*

STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Theoretical lessons

Written final exam (100%) that includes:
Multiple Choice Test
Short Answer Questions

Laboratory lessons

Tests of exercises and multiple topics choice or short answer.
Practical examination.

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

1.Applied Biochemistry (Theory-Exercises). GA Karikas, Bibliopolis SA, 2012

2. Basic Medical Biochemistry Marks. Michael Lieberman, Allan D. Marks.Editions Parisianou, 2014

3. Medical Biochemistry, J.W. Baynes, M.H. Dominiczak, 2nd edition, Scientific Parisianou Publications SA

4. Harper's Biological Chemistry. Paschalidis Publications, 2011

5. Basic Principles of Biochemistry, Lehninger. Paschalidis Publications, 2007

6. Basic Biochemistry K. Dimopoulos, S. Antonopoulou. University Publications Athens, 2009

7. Biochemistry. P.Karlson, D Doenecke, J. Koolman. Litsa Publications, 1998

8. Principles of Biochemistry. D.L.Nelson, M.M.Cox, Lehninger, W.H. Freeman, 2004

9. Harper's Illustrated BiochemistryR. Murray, D.Granner, P. Mayes, V. Rodwell, 26th ed.McGrow-Hill, 2003

10. Biochemistry. N. Linardakis, C.Wilson, 1998

11. Clinical Biochemistry. A Gaw, Churchill Livingstone, 1999

Related academic journals:

Analytical Biochemistry.

Annual Review of Biochemistry.

Annual Review of Chemical and Biomolecular Engineering.

Archives of Biochemistry and Biophysics.

The Journal of Biochemistry

Methods in Enzymology

Journal of Biological Chemistry

Biochimica et Biophysica Acta

Analytical Biochemistry

Annual Review of Biochemistry

Journal of Cellular Biochemistry

COURSE OUTLINE

11. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**4061**	**COURSE SEMESTER**	**4th**
COURSE TITLE	**GENERAL HISTOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**5**
-----	**----**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**Specialized General Knowledge (SGK)**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE149/

12. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A*

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The purpose of this course is to:

introduce students to the concept of cells and tissues that are key components of any living organism, how conservation on the one hand the structure after death and other processing for macroscopic and microscopic examination.

After successful completion of this course the student will be able to:

1. Be aware of the concept of the cell and its components
2. Know the concept of cell differentiation and tissue
3. Be aware of the meaning and importance of post-mortem lesions and to prevented them

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Working independently
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment

- Production of free, creative and inductive thinking
- Production of new research ideas

13. SYLLABUS

Theory

1. **CELL.** General Knowledge about the cell. Cell membrane-Microscopic and electron microscopic structure. Functions. CELL ORGANELLS. Description in light microscope and in electron microscope of the basic cell organelles. Functions and examples. Centriole. Cytoskeleton. Microfilaments-intermediate filaments-microtubules. Location.
2. **CELL NUCLEUS-CHROMOSOMES**. Description of cell nucleus components in non-dividing (resting phase) cell. Karyotype, Genotype, Phenotype, Sex determination.
3. **CELL DIVISION.** Mitosis. Detailed description of mitosis phases. Miosis. Detailed description of the phases of first and second meiosis division. Differences between mitosis and miosis. Cell cycle. Description of cell cycle phases. Types of cell populations. Static-stable-renewed cellular populations. Examples. Cell death. Apoptosis. Morphological stages of apoptosis. Differences of cell apoptosis and necrosis.
4. **CELL TISSUES. A. EPITHELIAL TISSUE.** Detailed description of the main characteristics and features of epithelial tissue. Types of epithelial junctions. Description of occluding, attachment or anchoring, communicating or gap junctions. Junctional complex. Description of specialized structures of cell surface. Microvilli-stereovilli-cilia-glucocalyx. Functions of epithelial tissue. Mucus producing cells-protein producing cells-steroid producing cells. Cells with **«pump» ions. Examples.**
5. **CELL TISSUES. A. EPITHELIAL TISSUE. A1. COVERING EPITHELIUM. Types of covering epithelium. Simple (squamous, cuboidal columnar, pseudostratified columnar ciliated) and stratified epithelium (squamous, cuboidal columnar, transitional). Examples and functions.**
   A2. GLANDULAR EPITHELIUM. Types of glands (exocrine, endocrine, mixed). Examples. Classification of exocrine glands according to a) the mode of secretion, b) the duct morphology (shape) and c) the morphology of the glands (secretory) part. Examples.
6. **CELL TISSUES. B. CONNECTIVE TISSUE. Analytical description of the basic characteristics of the connective tissue. Analytical description of the connective tissue cells, fibres and extracellular connective tissue matrix. Functions of connective tissue. Types of connective tissue. Examples.**
7. **CELL TISSUES. SPECIALISED CONNECTIVE TISSUES. B1. CARTILAGE. Analytical description of the basic characteristics of cartilaginous tissue. Function. Types of cartilage. Examples.**
   B2. BONE. Analytical description of the basic characteristics of osseous tissue. Gross and microscopic forms of osseous tissue (primary or reticular, secondary or lamellar bone). Endochondral and intramembranous ossification. Growth plate (metaphysic). Osseous tissue remodeling. Differences of cartilaginous and osseous tissue.
8. **SPECIALISED CONNECTIVE TISSUES. B3. BLOOD AND HEMOPOIESIS**. **Analytical description of the microscopic structure of blood cell elements and correlation with**

their function. Types of white blood cells. Granulocytes. Description of the basic microscopic, morphological and functional characteristics of the granulocytes. Mononuclear phagocytic system.

9. **CELL TISSUES. C. MUSCULAR TISSUE. Analytical description of the microscopic structure, morphology and function of the three types of muscular tissue.**
   C1. SKELETAL. Morphology, microscopic structure, functions.

   C2. CARDIAC. Morphology, microscopic structure, functions.

   C3. SMOOTH. Morphology, microscopic structure, functions. Infrastructure of muscular tissue (epimysium, perimysium, endomysium). Muscular tissue regeneration.

10. **CELL TISSUES. D. NERVOUS TISSUE. Formation of nervous tissue. Detailed description of microscopic structure, basic characteristics and morphology of nerve cells (neurons). Types of neurons. General and special types. Microscopic structure of general and special type neurons. Location and function. Substratum cells in nervous tissue (origin, location, functions).**
    D1. CENTRAL NERVOUS SYSTEM (C.N.S). Cellular components of the Central Nervous System. (astrocytes, oligodendrocytes, ependymal cells and microglia. Morphology and function. Types and characteristics of synapses.

    D2. PERIPHERAL NERVOUS SYSTEM (P.N.S). Peripheral nerves (epineurium, perineurium, endoneurium). Ganglia. Morphology and localization. Sensory receptors (types-localization and function).

11. **IMMUNE SYSTEM-LYMPHATIC SYSTEM. Detailed description of the microscopic structure of lymph nodes, lymphatic vessels and the main organs of the immune system (bone marrow-lymph node-thymus-spleen).**
12. **CARDIOVASCULAR SYSTEM. Detailed description of the microscopic structure of the heart and blood vessels (arteries, veins, arterioles, venules, lymphatic vessels, capillaries) and correlation with their function. Differences between artery-vein, arterioles-venules. Description of heart tunica. (epicardium-myocardium-endocardium).**
13. **EMBRYOLOGY**. Basic knowledge of embryology. Fetal implantation, grooving. Placenta. Chorionic villi (primary-secondary-tertiary). Placenta function. Developing fetus 1-4 week. Development of the embryo between the 2nd and the 10th (lunar) month Related stages of fetal malformations. Fetal development between 2nd and 10th month (lunar). Multiple pregnancy. Congenital malformations and their causes (teratogenesis).

14. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of I.C.T. in Teaching for the slide show screen and course presentation Use of e-mail and Web page of he Department for the students communication, correspondence and notification accordingly and • Use of open e-class for the posting and handling

	of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, informations for the observation of congresses related to the teaching lesson of the academic course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	<table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments.</td><td>100</td></tr><tr><td>Study & analysis of bibliography</td><td>50</td></tr><tr><td>Course total</td><td>150</td></tr></table>
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other*	**Theory** **w**riting Final Examination (100%) which includes: • Short answer questions • Multiple choice questionnaires

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	

15. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Mescher L. Antony Junqueira's Basic Histology. 6th Greek edition, Broken Hill Publishers Ltd, Cyprus, 2015
2. Kierszenbaun L. Abraham & Laura L. Tres. Histology and Cell Biology. An Introduction to Pathology. 3rd Greek edition, Broken Hill Publishers Ltd, Cyprus, 2013
3. Carlson M. Bruce. Human Embryology and Developmental Biology. 4th Greek edition, Broken Hill Publishers Ltd, Cyprus, 2013
4. Ovalle K. William and Patrick C. Nahirney. F. Netter's Histology. 1st Greek. edition, Broken Hill Publishers Ltd, Cyprus, 2011
5. Anthouli-Anagnostopoulou Fr. Histopathology with elements of Oncology. Basic Knowledge. 1st editionη, Medical Editions, P.Ch. Paschalides, Athens 2009.
6. Manthos Anastasios. Aristotle University of Thessaloniki. Atlas of Histology. Medical Editions, P.Ch. Paschalides, Athens, 2006
7. Moore L. K. Embryology: The Human body formation before birth. Broken Hill Publishers Ltd, Cyprus, 2016
8. Michael Sotirios .Histology, 1st edition, Editions Kyriakidis, Athens, 2015
9. Gartner P. Leslie. Histology, 4th edition (Eng.) Parisianou & S.A.,2018

-Related academic journals:

1. Histology and Histopathology, ISSN 02133911, Spain
2. European Journal of Cell Biology, ISSN 0179335, Germany
3. Histopathology, ISSN 13652559, 0309-0167, UK
4. Cytopathology, ISSN 09565507, 13652303, UK
5. Diagnostic Histopathology, ISSN 17562317, UK
6. Analytical and Quantitative Cytology and Histology, ISSN 08846812, USA
7. Microscopy Research and Technique, ISSN 1059-910X, USA
8. Acta Cytologica, ISSN 0001557, USA
9. International Journal of Clinical and Experimental Pathology, ISSN 19362625, USA

(1) GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4051 - 4052	**SEMESTER**	4th
COURSE TITLE	GENERAL ANALYSIS OF BIOLOGICAL SAMPLES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Theoretical lessons	2	4
Laboratory lessons	2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized mandatory
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Moogle.uniwa.gr

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The student at the end of the lesson will be familiar with the:

- general urine analysis,
- general feces analysis,
- general sperm analysis,
- microscope analysis of vaginal fluid, pericardial fluid, pleuritical fluid, perinate fluid, cerebrospinal fluid and articular fluid.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Search for, analysis and synthesis of data and information with the use of the necessary technology Working independently Working in an interdisciplinary environment Team work	

(3) **SYLLABUS**

Theoretical courses

1. Introduction in analysis of urine, uroscopy.
2. Introduction in general analysis of urine. The collection of urine samples. The physical properties of urine. The centrifugation of urine samples.
3. Microscopy of urine. The identification of cell and non-organic substances of urine's sentiment.
4. Diagnosis of basic diseases of urinary system. The diagnosis of mellitus, icterus, urine stones.
5. Kidney diseases, their diagnosis though general analysis of urine.
6. Automatic analysis of urine. Internal and external quality control of urine analysis.
7. General analysis of vaginal samples (the microscopic elements of wet and dyed smears).
8. General analysis of amniotic fluid. The microscopic and chemical investigation of amniotic fluid.
9. Chemical analysis of maternal milk. The chemical analysis of chlorides in sweet.
10. Cytological and microscopical analysis of exudates.
11. The general analysis of feces and sputum.
12. The general analysis of cerebrospinal fluid.
13. The general analysis of synovial fluid.

Laboratory lessons

1. The use of urine strips, the collection of urine samples. Laboratory practice in the use of microscope.
2. The physical properties of urine (color, sediment, turbidity), determination of urine glucose with Benedict reagent. Laboratory practice in general urine analysis.
3. Centrifugation and microscopy of urine sediment. Laboratory practice in general urine analysis.
4. The chemical determination of protein and hemoglobulin in urine samples. Laboratory practice in general urine analysis.
5. The chemical determination of ketones and bilirubin in urine samples. Laboratory practice in general urine analysis.
6. The general analysis of vaginal fluid.
7. The general analysis of synovial fluid.
8. The general analysis of cerebrospinal fluid.
9. The microscopic and cytological analysis of pleural fluid.
10. The microscopic and cytological analysis of pericardial fluid.
11. The microscopic and cytological analysis of pancreatic fluid.
12. The chemical analysis of gastric fluid.
13. The microscopic and chemical analysis of feces.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching, Laboratory education
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, laboratory education Communication with students, Teaching through video and Kahoot tests

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures with audiovisual media	50
Laboratory practice	40
Individual project	20
Student's study hours	30
Course total	140

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Theory:

- Multiple choice questionnaires
- Short-answer questions

Laboratory:

- Laboratory work
- Short-answer questions
- Problem solving

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Karkalousos P, General urine analysis, sperm and other biological fluids, ISBN: 978-960-372-192. Litsas Medical Editions 2013.

Lyberaki E, Urine analysis and other biological fluids, ISBN 978-960-9465-13-7, Athanasios Altitzis 2012,

Evgeni E, Lymperopoulos G, Function of male sperm, 978-960-452-100-5. Αθήνα 2010. Bita Medical Editions 2010.

Ioannidis I, Clinical Chemistry I, ISBN 960-7425-45-6, Giathoudi editions 2004.

Brunzel N. Fundamentals of Urine and Body Fluid analysis, Saunders second edition, Philadelphia 2004, ISBN 978-0-7216-0178-2.

WHO laboratory manual on examination and processing of human semen analysis, Sixth edition, 2021.

Kruger T, Franken D, Atlas of Human Sperm Morphology Evaluation, Taylor & Francis, London 2004.

Rajasingham S. Jeyendran, Protocols for Semen Analysis in Human in Clinical Diagnosis, Taylor &

Francis, London 2002.
Comhaire F, Hargreave T, WHO Manual for the Standardized Investigation, Diagnosis and Management of the Infertile Male, Cambridge University Press, 2000.

- Related academic journals:

Journal of Body Fluids
Clinical chemistry
Clinical chimica acta
Human Reproduction
Andrology
Journal of Bacteriology
Nature Reviews Microbiology

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCE - MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4071-4072	SEMESTER	4th
COURSE TITLE	BIOLOGICAL SAMPES COLLECTION-VENIPUNCTURE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHIN GHOURS	CREDITS
LECTURES	2	
LABORATORY EXERCISES	2	
		4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIAL BACKGROUND
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE142/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
criptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Upon successful completion of the course the students will be able to:

Collect venous and capillary blood.
Have knowledge about all human biological samples.
Collect safely any biological sample.
Distinguish biological sampling errors.
Collaborate with patients to take biological samples.
Collaborate with their classmates in order to present a medical case where they will give instructions and takevenous and capillary blood.

Aim of the course: Students should be familiar with the correct blood sampling process and will be able to matchthe laboratory test with the appropriate tubes. Also they will be able to follow the afety and hygiene rules for the protection of themselves and patients too when receiving, collecting and handle blood samples.

Also, they will be aware of the intake of other biological fluids and secretions of the human body in order to beable to evaluate their laboratory findings.

Objectives of the course: Students who successfully complete the course are able to properly and successfullydraw blood from a vein (venipuncture) and give instructions for taking all the biological fluids and human samples.

rch, analysis and synthesis of data and information, using the necessary technologies.
Working independently.
Teamwork.
Work in an interdisciplinary environment.
Production of free, creative and inductive thinking.

Working independently
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Criticism and self-criticism
Production of free, creative and inductive thinking
……
Others…
…….

3. **SYLLABUS**

LECTURES
1.INTRODUCTION

Professional rights of Medical Laboratory Technologist and protection measures in the laboratory.

2. Blood collection.
Blood components, choice of vein for blood collection, capillary and venous blood collection.

3. Taking blood for blood donation.
The blood sampling technique for blood donation and bag and sample management.

4. Adverse reactions from blood donation - Anticoagulants and blood culture.
Venipuncture reactions and immediate actions. Taking blood from newborns and the kinds of blood anticoagulants.

5. Urine.
Taking a random urine sample, 12-hour / 24-hour urine, urine preservatives.

6. Bone marrow - Synovial fluid.
The process of receiving, maintaining, transporting and handling bone marrow and synovial fluid.

7. Stools.
The correct technique of taking a random stool sample and taking stool for parasitological examinations.

8. Bronchial suction-Sputum.
Familiarity with the techniques of making bronchial suctions and sputum.

9. Pleural - Pericardial fluid.
Learning the techniques of taking and laboratory tests of pleural and pericardial fluid.

10. Upper respiratory system.
Analysing the secretions of the upper respiratory system, the normal flora as well as the eye smear.

11. Gastric and duodenal fluid - Bile.
The technical samples and the diagnostic value of the gastric and duodenal fluid and bile tests.

12. Cerebrospinal fluid.
The technique of cerebrospinal fluid collection, separation and maintenance of the sample, as well as the diagnostic value of laboratory tests.

13. Sperm - Vaginal fluid.
Sperm and vaginal fluid collection techniques, sample identification and maintenance.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures in the classroom. Face-to-face laboratory exercises in Hematology-Blood donation Laboratory and in hospitals.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and use of e-mail and the website of the Department for communication with students. Use of the e-class for the posting and distribution of scientific articles, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	60
Laboratory practice	54
Course total	114

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theoretical part Written final exams (100%) that includes: - Long answer Questions - Multiple Choice Test - Short Answer Questions Laboratory examination - Written / oral final exam with multiple choice and long answer questions. - Capability of taking capillary and venous blood (venipuncture).

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Marshall A. Lichtman, Thomas J. Kipps, Uri Seligsohn, Kenneth Kaushansky, Josef T. Prchal.

Williams Hematology, 8e The McGraw-Hill Companies, Inc, 2010.

- Related academic journals:

• Ronald Hoffman MD, Edward J. Benz Jr. MD. Hematology: Basic Principles and Practice, Expert Consult Premium Edition - Enhanced Online Features and Print, 6e, 2012.

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	4021	**SEMESTER**	4th
COURSE TITLE	BIO SAFETY		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Theoretical lessons		2	2
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	Moodle.uniwa.gr		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students at the end of the lessons will be familiar with:

- the basic principles of bio safety according to the specification of each laboratory,
- the international organizations of bio safety/bio protection and the international requirements and rules,
- the basic infrastructure that any laboratory with biological samples should have, and the types of PPE (personal protective equipment) of the laboratory staff.
- the international standards and the Greek and international legislation concerning bio safety.
- the assessment of biological risk.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information with the use of the necessary technology

Working independently

Working in an interdisciplinary environment

Individual work

3. **SYLLABUS**

1. Introduction to bio safety. The definition of bio security. The role of the bio safety officer in biomedical laboratories and hospitals. The international federations of Bio safety Associations and how to obtain a certificate of bio safety competence (Professional Certification or PC).
2. Legal framework related to bio safety. The Greek legislation on bio safety. European and international standards and guidelines about bio safety. The management of bio safety. in Greek hospitals and health care facilities.
3. The "valuable biological samples". The classification of "Valuable Biological Materials" (VBM) into risk groups.
4. Bio safety Levels 1-4. PPE and equipment requirements (laboratory design, and necessary building structures).
5. Greek and international biosafety standards. The requirements of ISO 17025 and ISO 15189 for biosafety. The Greek legislation about the shipping of biological samples. The CWA 15793 standard. The European Bio security Awareness Raising Network. The working protocols (SOPS).
6. Fire protection. Fire safety, categories of fires, causes, flammables and explosive materials, firefighting, fire extinguishers, extinguishing materials.
7. The monitoring of the microbial background. Bio safety hot spots-drains. Disinfection, sterilization and waste disposal. The "sick house syndrome".
8. Personal Protective Equipment (PPE). Personal hygiene and safety facilities. Emergency provision and control. Signals of occupational hazards. Practice in bio safety Spill procedure for infection control.
9. Chemical safety. Categories of chemicals and properties. The REACH convention, the coding of chemical compounds. Chemical handling, use, storage, splashing, disposal, protective equipment.
10. Biosafety and radioactivity. Types of radiation, hazards, safe handling. The ISO FDIS 35001.
11. Biosafety in specialized laboratories (molecular biology, laboratory animal management, cell culture, genetically modified organisms [GMO]).
12. Biosecurity risk assessment (biosecurity risk management). The use of the risk matrix and related practical exercise.
13. Bioterrorism, biological warfare. Historical background. Which biological agents have been used in the past. Today's reality. International legislation. Greek and international anti-bioterrorism agencies.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face teaching</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching, Communication with students, Teaching through video, Collaboration between students – professors through short assays.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures with audiovisual media</td><td>30</td></tr>
<tr><td>Individual project</td><td>10</td></tr>
<tr><td>Student’s study hours</td><td>10</td></tr>
<tr><td>Course total</td><td>40</td></tr>
<tr><td></td><td></td></tr>
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</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Multiple choice questionnaires (relied on the Professional certification of IFBA [International Federation of Biosafety Association])
Short assay
Problem solving</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Ryan J. Biosecurity and Bioterrorism, 2nd edition. Elsevier 2016

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Biosafety Programme Management. 2021 edition

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Biological Biosafety Cabinets and other Primary Containment Devices. 2021

edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Decontamination and Waste Management. 2021 edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Laboratory Biosafety Management. 2021 edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Laboratory Design and Maintenance. 2021 edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Outbreak Preparedness and Resilience. 2021 edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Protective Personal Equipment. 2021 edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Laboratory Biosafety Manual. 2021 edition.

World Health Organization. WHO Laboratory Biosafety Management and Associated Monographs - Risk Assessment. 2021 edition.

Centers of Diseased Control. Guidelines for Safe Work Practices in Human and Animal Medical Laboratories. 2012 edition.

Centers of Diseases Control. Biosafety in Microbiological and Biomedical Laboratories. 5th Edition, 2012

CEN Workshop Agreement. CWA 15793 standard. 2011 edition

ISO/FDIS 25001. Biorisk management for laboratories and other related organizations, 2019 edition.

- Related academic journals:

Biosafety and Health

Applied Biosafety

Journal of Biosafety and Biosecurity

Journal of Biosafety

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**4041**	**SEMESTER**	**4th**
COURSE TITLE	**Human Genetics**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special Background Course		
PREREQUISITE COURSES:	–		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

AIM

The course material aims to present the principles of Genetics as applied to man. Much of the course concerns the role of Genetics in human health and the interaction of basic scientific knowledge and clinical application.

The genetic, molecular and chromosomal basis of inherited diseases, cancer, diseases with genetic predisposition as well as other pathological disorders are presented extensively.

The teaching course presents the basic principles with extensive use of examples.

The course touches and covers the branches of Genetic diagnostics, Genetic counseling and

the emerging branch of "Genetics in Medicine".

Objectives and expected learning outcomes

Upon completion of the course, the students will be able to know and to understand:

- *The organization of the human genome and the molecular etiology of various genetic diseases.*
- *The concept of genetic material sequencing and techniques, Sanger sequencing, Next Generation Sequencing (NGS), and the applications and ethical issues that arise.*
- *Terms such as molecular evolution of genes, population structure and natural selection. Apply the information to computer phylogenetic programmes.*
- *The modern methodologies for the analysis of human genetic materials, but also clinical cases of genetic diseases.*
- *New knowledge opens for diagnosis, prognosis and treatment of genetic diseases (Gene Therapy).*
- *The ability to evaluate the continuous information from the latest developments in the field of related research and development.*
- *How to develop a research work either individually or in groups (Search the relevant literature, evaluate the data and writing.*
- *How to use general texts, reference books and a number of other resources to further develop knowledge through continuous independent learning.*

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- *Search for, analysis and synthesis of data and information, with the use of the necessary technology*
- *Working independently*
- *Teamwork*

- *Working in an interdisciplinary environment*
- *Working in an international environment*
- *Production of new research ideas*
- *Production of free, creative and inductive thinking*
-

3. SYLLABUS

Lectures

1. **Introduction to Human Genetics – The role of Genetics in health:** The human genome and Chromosomes.
2. **Biochemical and molecular basis of genetic disease:** The structure od DNA. Macro and micro lesions. Mutations. Signal mutations and their location.
3. **Mendelian character inheritance in humans:** Study of heredity, law of Mendel. Basic Mendelian models of heredity- Nonmendelian models. Monogenic disorders and multifactorial heredity
4. **Hemoglobinopathies:** Thalassemia's, Rhesus (anti-D, IgG)
5. **Cytogenetics:** Chromosomes-Cytogenetics-Chromosomes Abnormalities-Clinical Cytogenetic: Disorders of Autosomes and the Sex Chromosomes (Down Syndrome, Edwards, Patau and Cri Du Chat syndrome)
6. **Detection Methods of genetic syndromes/Tutorial exercise:** FISH, PCR, Sequencing, karyotype.
7. **Genetics of Cancer in human:** Forms of family cancer, cancer syndromes (retinoblastoma, Heredity breast and ovary cancer, Familial Adenomatous Polyposis, Li-Fraumeni Syndrome, Von Hippel- Lindau Syndrome etc.)-Cytogenetics in Cancer
8. **Population Genetics:** The study of the history of evolution (classification, phylogeny based on morphological and molecular data, molecular clock). Evolution at the molecular level (rate of sequence evolution, transposable elements, evolution of genes and proteins, horizontal gene transfer). Diversity. Population structure. Natural Selection. Adaptation.
9. **Population Genetics/ Tutorial exercise:** The genome and databases. Introduction to the use of software for the analysis of polymorphisms of a nucleotide and the calculation of binding imbalance.
10. **Clinical Genetics and Genetic counseling/ Tutorial exercise:** Applications of Genetics in clinical practice. Genetic counseling- clinical cases of genetic diseases and their management. Prenatal screening.
11. **Genome Sequencing:** Human genome analysis program/its applications. Ethical dilemmas in Human Genetics. Sanger Sequencing, Next Generation Sequencing (NGS). Position-based cloning. Gene's mapping involved in genetic diseases.
12. **Gene Therapy:** The future Therapy. How it works its applications in the treatment of cancer, cystic fibrosis etc. Stem cells/Ethical dilemmas.
13. **Genetic Modification:** What is and how the method CRISPR-Cas9 works. Structural and functional analysis of Cas9 of the CRISPR system. The experimental and non-experimental applications to date. Ethical problems and Security for the modification of Human Genome.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively. • Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	*39*
Laboratory/Tutorial Exercises	*0*
Interactive Teaching	*12*
Project elaboration	*13*
Essay writing	*13*
Educational visits	*0*
Independent Study & Bibliography Analysis	*13*
Course total	***120***

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

1. Written final exam (60%) that includes:

- *Multiple choice questions*
- *Short Answer Questions*
- *Open response questions*
- *Critical thinking questions, theory understanding questions and evaluation of way of thinking questions*
- *Problem Solving*

Students, when given the questions, are informed about how to evaluate each group of topics, depending on their degree of difficulty. The evaluation takes into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency.

2. Paper Presentation (40%)

The theory is examined in the final exam, while in case of individual or teamwork, the grade of the latter participates up to 40% in the formation of the grade of the course

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek

1. *Thomson and Thomson, Medical Genetics (translated in Greek edn), PASCHALIDIS PUBLICATIONS, 2011*
2. *Krebs J. Lewin's, Genes X, (translated in Greek edn), PUBLICATIONS Broken Hill 2012*
3. *Brown T.A., Genomes (translated in Greek edn), PUBLICATIONS Broken Hill 2010*

B. In English

1. *Ricki Lewis, Human Genetics, ed McGrow- Hill Science Engineering/ Math;6th ed 2004*
2. *Muin J Khoury et al, Genetic and public health in the 21st century, Ed Oxford University Press, 2000*
3. *Michael Cummings, Human Hereditary: Principles and issues, Ed Brooks/Cole 2005*

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**			
ACADEMIC UNIT	**Department of Biomedical Sciences Medical laboratories**			
LEVEL OF STUDIES	**Undergraduate studies**			
COURSE CODE	**4011-4012**	**SEMESTER**	**4th**	
COURSE TITLE	**Molecular Biology**			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures			3	6
Laboratory exercises			3	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special Background Course			
PREREQUISITE COURSES:	_			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of*

Aim of the course:

The theoretical lectures and the laboratory exercises of the course introduce students to the basic concepts, principles and methods of molecular biology used in laboratories providing services to the public and in research protocols. The lectures and the laboratory exercises will operate simultaneously as much as possible and the monitoring of students' knowledge and progress will be provided by multiple choice tests and feedback during the laboratory exercises. Students upon the end of the course should have obtained the knowledge and expertise to attend special background courses and laboratory exercises in the following semesters, as well as to know and understand both the basic concepts of molecular biology and the theoretical and practical background of the basic methods of molecular biology. Students after the end of the semester, must have acquired good theoretical and practical knowledge of modern molecular methods.

Objectives and expected learning outcomes:

- Elements and control mechanisms of gene expression and the related molecular methods used to study it.
- Data on transgenic animals and genetic modification.
- Elements of bioinformatics and its applications in molecular biology.
- How to use general texts, reference books and a range of other resources to further develop knowledge through continuous independent learning.
- Conducting a series of laboratory exercises, which develop the practical scientific skills.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others…

- *Research, analyze and synthesize data and information by using the necessary technologies*
- *Autonomous individual work*
- *Teamwork*
- *Work in an interdisciplinary environment*
- *Production of new research ideas*
- *Respect for the natural environment*
- *Promoting free, creative and inductive thinking*

3. SYLLABUS

Lectures:

1. ***Structure and properties of DNA and RNA****: Central dogma of molecular biology - DNA- Structure and function. Chromatin Forms-Chromosomes. DNA denaturation, rearrangement and DNA ligation. Nucleic acid hybridization. Supercoiled DNA, topoisomerases. Bacterial and eukaryotic chromosomes. Nucleosomes, active chromatin. Relationship between genome size and organ complexity. Repetitive DNA. The genetic material of viruses and bacteriophages.*

2. ***Recombinant DNA technology****: Restriction enzymes (endonucleases). Artificial ligation of DNA fragments. DNA mapping using restriction enzymes.*

3. ***Cloning, cloning vectors.***

4. ***Nucleic acid hybridization:*** *Detection and characterization of specific DNA sequences, probes, hybridizations using Southern, Northern, etc.*

5. ***Determination methods of primary DNA structure****. Research programs for determining whole genomes of organisms.*

6. ***Polymerase chain reaction (PCR) and its applications.*** *Real time polymerase chain reaction (real time PCR) and its applications*

7. ***DNA replication:*** *Protein factors and replication enzymes. Mechanisms of DNA replication in prokaryotic and eukaryotic organisms. The replication mechanisms in bacteriophage DNA as well as in DNA and RNA viruses.*

8. ***Transcription:*** *Transcription enzymes. Promoter sequences. Transcription*

mechanism in prokaryotic organisms. RNA maturation. Regulatory mechanisms.

9. ***Transcription in eukaryotic organisms:*** *Specific features. Transcription factors. RNA maturation. Regulation mechanisms of transcription.*

10. ***Protein biosynthesis (translation):*** *Genetic code, instability, repression, mRNA origin and evolution of the genetic code. Mechanisms of protein synthesis. Structure and functionality of tRNAs. Structure and functionality of ribosomes. Role of ribosomal RNA in protein synthesis.*

11. ***Gene expression study*** *using molecular biology methods such as RT-PCR and qRT-PCR as well as microarrays and RNA-sequencing technology*

12. ***Transgenic animals and genetic modification***

13. ***Bioinformatics in molecular biology***

Laboratory exercises:

14. *Genomic DNA isolation of from eukaryotic cells*

15. *Restrictive enzymes (endonucleases) - digestion and genomic DNA electrophoresis*

16. *Plasmid isolation from bacterial cells*

17. *Restriction enzyme maps-Electrophoresis of plasmid digestion products*

18. *RNA isolation*

19. *Nucleic acid electrophoresis (DNA, RNA)*

20. *Southern, Northern, in situ hybridization (ISH), Fluorescent* in situ *hybridization (FISH)*

21. *Polymerase chain reaction (PCR)*

22. *Real time PCR reaction*

23. *Reverse transcriptase reaction, RT-PCR, qRT-PCR*

24. *Hybridization Microarrays, RNA Sequencing*

25. *Introduction of recombinant plasmid into bacterial cells and selection of clones with antibiotic in solid medium cultures*

26. *Sanger sequencing, NGS (Next Generation sequencing).*

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face lectures and laboratory exercises</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of audiovisual media (ICT) in the face-to-face lectures
• Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program.
• Ability to connect to the internet
• Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR
• Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively.
• Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Laboratory exercises</td><td>39</td></tr>
<tr><td>Interactive Teaching</td><td>6</td></tr>
<tr><td>Bibliography study and analysis</td><td>26</td></tr>
<tr><td>Study preparation</td><td>13</td></tr>
<tr><td>Written assignment</td><td>13</td></tr>
<tr><td>Educational visits/excursions</td><td>0</td></tr>
<tr><td>Independent study</td><td>35</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>171</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory-lectures:
5) Final written examination (60% of theory) in Greek using:
• Multiple choice questionnaires and/or
• Short-Answer Questions and/or
• Open-ended questions and/or
• Problem Solving and/or
• Questions of critical thinking (understanding theory and evaluating way of thinking)

When given the topics of the final examination, students are informed about the evaluation system of each topic group, depending on their degree of difficulty and how it is taken into account the completeness and the clarity of the answer, the degree of critical thinking of the student and the language Proficiency.</td></tr>
</table>

	6) Presentation of essays (40% of theory) The grade of theory participates by 70% in the final grade of the course. The knowledge of theory is tested in the final examination mentioned above, while in case of individual or group essays, the degree of the latter participates up to 40% in the formation of the degree of the theory. **Laboratory:** • Final examination of laboratory capability • Oral examination • Midterm tests or assessment of the laboratory exercises • Laboratory work Laboratory exercises participate by 30% in the final grade of the course. The laboratory exercises part of the course is examined simultaneously with the theory part in the final examination, as well as during the laboratory exercises. Some exercises require a written report of analysis and processing of laboratory results, which are taken into account in the final grade of the laboratory exercises part of the course.

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek language:

1) Molecular Biology of the Gene (2nd Greek-7th American Edition). James Watson, Tania Baker, Stephen Bell, Alexander Gann, Michael Levine, Richard Losick. UTOPIA Publishing. 2015
2) Krebs J.: Lewin's Genes X (10th edition). Broken Hill. 2012
3) Principal of Molecular Biology. Burton E. Tropp. Academic Publications J. Basdra & Co. 2014
4) Biology: The core. E. Simon. Parisianou S.A, 2015
5) Brown T.A.: Genomes 3. Broken Hill. 2010

B. In English language;

1. Nessa Carey.: The epigenetics revolution. How modern biology is rewriting our understanding of genetics, disease and inheritance. Columbia University Press, 2013

- Related academic journals:

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**4061**	**COURSE SEMESTER**	**4th**
COURSE TITLE	**GENERAL HISTOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**5**
-----	**----**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**Specialized General Knowledge (SGK)**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE149/

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The purpose of this course is to :

introduce students to the concept of cells and tissues that are key components of any living organism, how conservation on the one hand the structure after death and other processing for macroscopic and microscopic examination.

After successful completion of this course the student will be able to:

4. Be aware of the concept of the cell and its components
5. Know the concept of cell differentiation and tissue
6. Be aware of the meaning and importance of post-mortem lesions and to prevented them

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Working independently
- Search for, analysis and synthesis of data and information, with the use of the necessary

technology

- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking
- Production of new research ideas

7. SYLLABUS

Theory

14. **CELL.** General Knowledge about the cell. Cell membrane-Microscopic and electron microscopic structure. Functions. CELL ORGANELLS. Description in light microscope and in electron microscope of the basic cell organelles. Functions and examples. Centriole. Cytoskeleton. Microfilaments-intermediate filaments-microtubules. Location.
15. **CELL NUCLEUS-CHROMOSOMES**. Description of cell nucleus components in non-dividing (resting phase) cell. Karyotype, Genotype, Phenotype, Sex determination.
16. **CELL DIVISION.** Mitosis. Detailed description of mitosis phases. Miosis. Detailed description of the phases of first and second meiosis division. Differences between mitosis and miosis. Cell cycle. Description of cell cycle phases. Types of cell populations. Static-stable-renewed cellular populations. Examples. Cell death. Apoptosis. Morphological stages of apoptosis. Differences of cell apoptosis and necrosis.
17. **CELL TISSUES. A. EPITHELIAL TISSUE.** Detailed description of the main characteristics and features of epithelial tissue. Types of epithelial junctions. Description of occluding, attachment or anchoring, communicating or gap junctions. Junctional complex. Description of specialized structures of cell surface. Microvilli-stereovilli-cilia-glucocalyx. Functions of epithelial tissue. Mucus producing cells-protein producing cells-steroid producing cells. Cells with **«pump» ions. Examples.**
18. **CELL TISSUES. A. EPITHELIAL TISSUE. A1. COVERING EPITHELIUM. Types of covering epithelium. Simple (squamous, cuboidal columnar, pseudostratified columnar ciliated) and stratified epithelium (squamous, cuboidal columnar, transitional). Examples and functions.**
    A2. GLANDULAR EPITHELIUM. Types of glands (exocrine, endocrine, mixed). Examples. Classification of exocrine glands according to a) the mode of secretion, b) the duct morphology (shape) and c) the morphology of the glands (secretory) part. Examples.
19. **CELL TISSUES. B. CONNECTIVE TISSUE. Analytical description of the basic characteristics of the connective tissue. Analytical description of the connective tissue cells, fibres and extracellular connective tissue matrix. Functions of connective tissue. Types of connective tissue. Examples.**
20. **CELL TISSUES. SPECIALISED CONNECTIVE TISSUES. B1. CARTILAGE. Analytical description of the basic characteristics of cartilaginous tissue. Function. Types of cartilage. Examples.**
    B2. BONE. Analytical description of the basic characteristics of osseous tissue. Gross and microscopic forms of osseous tissue (primary or reticular, secondary or lamellar bone). Endochondral and intramembranous ossification. Growth plate (metaphysic).

Osseous tissue remodeling. Differences of cartilaginous and osseous tissue.

21. **SPECIALISED CONNECTIVE TISSUES. B3. BLOOD AND HEMOPOIESIS**. **Analytical description of the microscopic structure of blood cell elements and correlation with their function. Types of white blood cells. Granulocytes. Description of the basic microscopic, morphological and functional characteristics of the granulocytes**. Mononuclear phagocytic system.
22. **CELL TISSUES. C. MUSCULAR TISSUE. Analytical description of the microscopic structure, morphology and function of the three types of muscular tissue.**
    C1. SKELETAL. Morphology, microscopic structure, functions.

    C2. CARDIAC. Morphology, microscopic structure, functions.

    C3. SMOOTH. Morphology, microscopic structure, functions. Infrastructure of muscular tissue (epimysium, perimysium, endomysium). Muscular tissue regeneration.

23. **CELL TISSUES. D. NERVOUS TISSUE. Formation of nervous tissue. Detailed description of microscopic structure, basic characteristics and morphology of nerve cells (neurons). Types of neurons. General and special types. Microscopic structure of general and special type neurons. Location and function. Substratum cells in nervous tissue (origin, location, functions).**
    D1. CENTRAL NERVOUS SYSTEM (C.N.S). Cellular components of the Central Nervous System. (astrocytes, oligodendrocytes, ependymal cells and microglia. Morphology and function. Types and characteristics of synapses.

    D2. PERIPHERAL NERVOUS SYSTEM (P.N.S). Peripheral nerves (epineurium, perineurium, endoneurium). Ganglia. Morphology and localization. Sensory receptors (types-localization and function).

24. **IMMUNE SYSTEM-LYMPHATIC SYSTEM. Detailed description of the microscopic structure of lymph nodes, lymphatic vessels and the main organs of the immune system (bone marrow-lymph node-thymus-spleen).**
25. **CARDIOVASCULAR SYSTEM. Detailed description of the microscopic structure of the heart and blood vessels (arteries, veins, arterioles, venules, lymphatic vessels, capillaries) and correlation with their function. Differences between artery-vein, arterioles-venules. Description of heart tunica. (epicardium-myocardium-endocardium).**
26. **EMBRYOLOGY**. Basic knowledge of embryology. Fetal implantation, grooving. Placenta. Chorionic villi (primary-secondary-tertiary). Placenta function. Developing fetus 1-4 week. Development of the embryo between the 2nd and the 10th (lunar) month Related stages of fetal malformations. Fetal development between 2nd and 10th month (lunar). Multiple pregnancy. Congenital malformations and their causes (teratogenesis).

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall.
USE OF INFORMATION AND COMMUNICATIONS	• Use of I.C.T. in Teaching for the slide show screen and course presentation and

<table>
<tr><td>TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>

- Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly
- Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, informations for the observation of congresses related to the teaching lesson of the academic course, etc.

</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments.</td><td>100</td></tr>
<tr><td>Study & analysis of bibliography</td><td>50</td></tr>
<tr><td>Course total</td><td>150</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination,</td><td>Theory

writing Final Examination (100%) which includes:

- Short answer questions
- Multiple choice questionnaires

</td></tr>
</table>

public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

10. Mescher L. Antony Junqueira's Basic Histology. 6th Greek edition, Broken Hill Publishers Ltd, Cyprus, 2015

11. Kierszenbaun L. Abraham & Laura L. Tres. Histology and Cell Biology. An Introduction to Pathology. 3rd Greek edition, Broken Hill Publishers Ltd, Cyprus, 2013

12. Carlson M. Bruce. Human Embryology and Developmental Biology. 4th Greek edition, Broken Hill Publishers Ltd, Cyprus, 2013

13. Ovalle K. William and Patrick C. Nahirney. F. Netter's Histology. 1st Greek. edition, Broken Hill Publishers Ltd, Cyprus, 2011

14. Anthouli-Anagnostopoulou Fr. Histopathology with elements of Oncology. Basic Knowledge. 1st editionη, Medical Editions, P.Ch. Paschalides, Athens 2009.

15. Manthos Anastasios. Aristotle University of Thessaloniki. Atlas of Histology. Medical Editions, P.Ch. Paschalides, Athens, 2006

16. Moore L. K. Embryology: The Human body formation before birth. Broken Hill Publishers Ltd, Cyprus, 2016

17. Michael Sotirios .Histology, 1st edition, Editions Kyriakidis, Athens, 2015

18. Gartner P. Leslie. Histology, 4th edition (Eng.) Parisianou & S.A.,2018

-Related academic journals:

1. Histology and Histopathology, ISSN 02133911, Spain

2. European Journal of Cell Biology, ISSN 0179335, Germany

3. Histopathology, ISSN 13652559, 0309-0167, UK

4. Cytopathology, ISSN 09565507, 13652303, UK

5. Diagnostic Histopathology, ISSN 17562317, UK

6. Analytical and Quantitative Cytology and Histology, ISSN 08846812, USA

7. Microscopy Research and Technique, ISSN 1059-910X, USA

8. Acta Cytologica, ISSN 0001557, USA

9. International Journal of Clinical and Experimental Pathology, ISSN

19362625, USA

9.6.2 5th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCE - MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	5011-5012	SEMESTER	5th
COURSE TITLE	HEMATOLOGY I		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		WEEKLY TEACHIN GHOURS	CREDITS
LECTURES		4	
LABORATORY EXERCISES		4	
			8
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIAL BACKGROUND		
PREREQUISITE COURSES:	NONE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE124/		

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B

Upon successful completion of the course the student will be able to:

Performs basic hematological laboratory tests.
Has an understanding of general blood counts, red blood cell counts, blood coagulation, staining and microscopicobservation.

Has knowledge of hematopoiesis, structure-function of blood cells, anemias, iron metabolism, differentialdiagnosis of anemias, classification of anemias.
Able to distinguish generic blood.
Collaborate with patients for basic blood tests.
Uses all laboratory hematology analyzers as well as flow cytometry.
Collaborate with his classmates to create and present a hematological passage.
The aim of the course is the students to understand the process of preparation of blood sample for analysis and to know the philosophy and operation of the blood hematology analyzer. Also, to be able to operate the instruments and machines according to the international operating standards of a hematology laboratory. In addition, studentswill know the etiological pathogenesis of all anemias and hemoglobinopathies as well as their complete laboratorytesting with a view to the diagnostic approach.

Students who successfully complete the course are able to know all the parameters of the general blood test and to distinguish between normal and abnormal laboratory results. Also, they can draw conclusions from the study ofhematological smear under the microscope.

2. LEARNING OUTCOMES

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations
Decision-making

Working independently
Team work

Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas

Project planning and management Respect for difference and multiculturalism Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

……

Search, analysis and synthesis of data and information, using the necessary technologies.
Working independently.
Teamwork.
Work in an interdisciplinary environment.
Production of free, creative and inductive thinking.

3. SYLLABUS

1. General blood test - Erythrocyte sedimentation rate-Hematology analyzers- Errors and diagnostic tags ofhematology analyzers
2. Morphology, physiology and differentiation of tissues and cells of the hematopoietic system (A)
3. Structure and function of white blood cells - Structure and functions of platelets
4. Structure and function of red blood cells
5. Differential Diagnosis of Anemia
6. Iron Metabolism - Hemodialysis - Hemochromatosis - Iron deficiency Anemia
7. Chronic Disease Anemia - Iron Blast Anemia - Porphyria
8. Megaloblastic Anemia and Congenital Dyserythrocytic Anemias
9. Marrow aplasia
10. Paroxysmal Nocturnal Hemoglobinuria - Hemolytic Anemias
11. Hemoglobinopathies
12. Congenital Hemolytic Anemias
13. Acquired Hemolytic Anemias of Immunological Principle - Autoimmune Hemolytic Anemia. Acquired Hemolytic Anemias of Non-Immune Principle

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures in the classroom. Face-to-face laboratoryexercises in Hematology-Blood donation Laboratory.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and use of e-mail and the website of the Department for communication with students. Use of the e-classfor the posting and distribution of scientific articles, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	120
Laboratory practice	100
Study and analysis of bibliography	20
Course total	240

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theoretical part Written final exams (100%) that includes: - Long answer Questions - ~~Multiple Choice Test~~ - Short Answer Questions Laboratory examination - Written / oral final exam with multiple choice and long answerquestions. - Capability of blood smear observation in microscopy

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography: •

Marshall A. Lichtman, Thomas J. Kipps, Uri Seligsohn, Kenneth Kaushansky, Josef

T. Prchal. Williams Hematology, 8e The McGraw-Hill Companies, Inc, 2010.

Ronald Hoffman MD, Edward J. Benz Jr. MD. Hematology: Basic Principles and Practice, Expert Consult Premium Edition - Enhanced Online Features and Print, 6e, 2012.

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	5021-5022	**SEMESTER**	5th
COURSE TITLE	BACTERIOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	7
Laboratory Exercises	4	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized General Knowledge (SGK)
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC352/ https://eclass.uniwa.gr/courses/BISC355/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of course is to enable the students to understand:

1) The basic concern of Bacteriology and the systematic study of bacteria

2) Interactions between bacteria and human and their effects and factors influencing the onset and manifestation of the disease

3)The basic biological and genetic characteristics that contribute to and are involved in their pathogenesis and their association with the disease they cause
4) The principles of laboratory diagnosis of bacterial infections and methodologies for isolation, culture, detection, identification / standardization, as well as the interpretation and evaluation of laboratory findings and
5)The mechanisms of sensitivity and resistance to antibiotics that will enable them to use the appropriate antibiotics in the laboratory

The scope of the course is to introduce students to the principles of Bacteriology and their applications in laboratory and clinical practice. The general characteristics, the structure, the classification, the pathogenic action of the bacteria, but also the laboratory diagnosis, the epidemiology, the treatment and the prevention are presented in detail. The course additionally covers the branches of bacterial genetics, standardization and phylogenetic study of their population

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

The student after the end of the course will be:

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking
- Production of new research idea

3. SYLLABUS

Theory

1. **Introduction to Bacteriology:** Definitions. Ecology of bacteria. Bacterial symbiotic relationships and habitats. Physicochemical functions of bacteria. Presence of pathogens and non-bacteria in a variety of aquatic and solid ecosystems / food. Biofilms- biofilm formation, properties, pathogenesis.
2. **Structure and classification of bacteria:** Bacterial cell structure. Bergey classification. Molecular classification. Bacterial evolution and diversity. Phylogeny. Proteobacteria. Archaebacteria
3. **Bacterial genetics:** Bacterial genome (Core and Accessory genome). Genetically transmissible elements. Pathogenicity genes. Plasmids / resistance genes. Introduction to genetic processes such as transformation, bacterial conjugation, mutagenesis. Recombinant DNA techniques.
4. **Bacterial metabolism:** Microbial growth in closed and open environment-continuous culture. Growth curves / liquid cultures. Energy and enzymes. Synthesis of nucleic acids and proteins. Gene regulation.
5. **Archaebacteria (*Archaea*):** Classification. Habitats. Structure and metabolism. Genetics of Archaea. Applications, his example of *Thermus aquaticus.*
6. **Proteobacteria:** Gram negative α-, β-, γ-, δ- και ε- proteobacteria. Characteristics, metabolism, participation in biochemical cycles. Classification: *Neisseriales, Enterobacterialles, Pseudomonadales, Vibrionales, Campylobacterales, Chlamydiaceae.*
7. ***Enterobacteralles****: Escherichia coli, Klebsiella, pneumonia, Yersinia pestis, Proteus mirabilis, Salmonella spp., Shigella spp.* General characteristics. Infectious agents. Pathogenic action-epidemiology. Laboratory diagnosis (phenotypic - molecular techniques).
8. ***Pseudomonadales:*** General characteristics. Infectious agents. Pathogenic action-epidemiology. Laboratory diagnosis (phenotypic - molecular techniques). The example of *Pseudomonas aeruginosa.*
9. ***Neisseriales/Vibrionales:*** *Neisseria gonorrhoeae, Neisseria meningitidis, Vibrio cholerae, Vibrio parahaemolyticus, Vibrio vulnificus.* General characteristics. Infectious agents. Pathogenic action-epidemiology. Laboratory diagnosis (phenotypic - molecular techniques).
10. ***Campylobacterales/Chlamydiaceae:*** *Campylobacter jejuni, Campylobacter coli, Helicobacter pylori, Chlamydia trachomatis, Chlamydophyla pneumonia.* General characteristics. Infectious agents. Pathogenic action – epidemiology. Laboratory diagnosis (phenotypic – molecular techniques).
11. **Gram positive coccus:** *Staphylococcus (Staphylococcus aureus), Streptococcus (Streptococcus pyogenes)* and *Enterococcus (Enterococcus faecalis).* General characteristics. Infectious agents. Pathogenic action-epidemiology. Laboratory diagnosis (phenotypic - molecular techniques).
12. **Gram positive coccus (*Clostridia, Mollicutes, Bacilli): Clostridium tetani, Clostridium botulinum, Clostridium perfrigens, Bacillus anthacis, Bacillus subtillis, Bacillus influenzae, Mycoplasma hyopneumoniae, Ureoplasma urealyticum.*** General characteristics. Infectious agents. Pathogenic action-epidemiology. Laboratory diagnosis (phenotypic - molecular techniques).
13. **Gram positive coccus *(Actinobacteria*):** *Corynebacterium diphtheriae, Mycobacterium tuberculosis, Mycobacterium leprae.* General characteristics. Infectious agents. Pathogenic action-epidemiology. Laboratory diagnosis (phenotypic - molecular techniques).

14. **Antimicrobial susceptibility to antibiotics:** Resistant bacteria in primary / secondary care facilities and environmental habitats. Classes of antibiotics per group of bacteria and their genetic basis. Antibiogram. Recording and control of microbial resistance
15. **Bacterial standardization and phylogeny:** Definition of standardization and its importance in the monitoring of bacterial infections. Phylogenetic studies of bacteria and modern methods for detecting the phylogenetic course of a bacterial population. The role of phylogeny in the development of the epidemiology of bacterial infections.

Laboratory

1. **Laboratory safety / Biosafety levels:** Safe laboratory handling, collective and individual protection measures. Bio-safety levels of bacterial infection testing laboratories (BSL).
2. **Nutrient substrates:** preparation of basic nutrient substrates, sterilization, storage.
3. **Culture of samples in nutrient substrates:** incubation, culture of Staphylococci, Streptococci, Enterobacteriaceae.
4. **Bacterial identification Part 1:** Colony study, preparation and microscopy of fresh samples.
5. **Bacterial identification Part 2:** Preparation staining and microscopy
6. **Identification of bacteria Part 3:** Study of biochemical properties of *Staphylococci* and *Streptococci.* Molecular identification
7. **Identification of bacteria Part 4:** Study of biochemical properties of *Enterobacterial.* Molecular identification.
8. **Identification of bacteria Part 5:** Study of biochemical properties of Pseudomonas. Molecular identification.
9. **Pharyngeal, ear sample culture**: Identification of microbes (evaluation of colonies, staining of microbes, study of biochemical properties).
10. **Blood cultures:** Identification of microbes (evaluation of colonies, staining of microbes, study of biochemical properties).
11. **Urine culture**: Identification of microbes (evaluation of colonies, staining of microbes, study of biochemical properties).
12. **Antibiogram:** diffusion on agar by the Kirby-Bauer method. Selection and evaluation of appropriate antibiotics.
13. **Antibiogram evaluation:** Application of the limits according to the international standards of Clinical and Laboratory Standards Institute (CLSI), European Committee on Antimicrobial Susceptibility Testing – EUCAST and Epidemiological Cut-Off Values (ECOFFs).
14. **Bacterial standardization:** Differences in standardization identification. Phenotypic and Molecular standardization (serotyping, pcr-based techniques). Evaluation of standardization results.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face – to- face in lecture hall and in the bacteriology Lab.</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of ICT in teaching
• Projection system and possibility of presentation with the application of the Power Point program
• Internet connection
• Use of HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR bibliography search engines
• Use of the e-mail and the website of the Department for the information of the students respectively
• Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Laboratory exercises / Tutoring</td><td>52</td></tr>
<tr><td>Interactive Teaching</td><td>10</td></tr>
<tr><td>Bibliography Study & Analysis</td><td>26</td></tr>
<tr><td>Study Preparation</td><td>13</td></tr>
<tr><td>Thesis Writing</td><td>13</td></tr>
<tr><td>Educational visits</td><td>0</td></tr>
<tr><td>Independent Study</td><td>57</td></tr>
<tr><td>Course total</td><td>210</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and</td><td>Theory
1. Writing Final Examination (60%) which includes:
• Multiple choice questions
• Short-answer questions
• Development questions
• Questions of judgment, understanding of theory and evaluation of way of thinking
• Problem solving

Students, when given the topics, are informed about how to evaluate each group of topics, depending on their degree of difficulty and take into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency.</td></tr>
</table>

where they are accessible to students.	2. Essay presentation (40%) The grade of theory participates by 70% in the final grade of the course. The theory is examined in the final exam, while in case of individual or group work, the degree of the latter participates up to 40% in the formation of the degree of the theory. **Laboratory:** • Final laboratory test • oral exam • midterm tests or assessment exercises • laboratory work Laboratory exercises participate by 30% in the final grade of the course. The laboratory is examined at the same time as the course in the final exam, as well as during the laboratory exercises, while some exercises require a written report of analysis and processing of laboratory results, which are taken into account in the final grade of the laboratory.

5. **ATTACHED BIBLIOGRAPHY**

- Suggested bibliography:

A. Greek

1. Murray P., Rosental K., Pfaller M. Medical Microbiology (Greek).Editor: Parisianou 8th edition, 2016
2. Harvalou A. Clinical Microbiology protocols - Summary of laboratory access to bacterial infections (Greek). Paschalidis Publications, 2007
3. Greenwood D., Slack R., Peutherer J., Barel M. MEDICAL MICROBIOLOGY Microbial Infections, Pathogenesis, Immunity, Laboratory Diagnosis and Treatment (Greek). Editor: Paschalides, 2011

B. English

1. Mandell, Douglas and Bannett's. Infections Disease Essentials, Editor: Parisianou,2019
2. INGRLIS, Master Medicine: Microbiology and Infections, Editor: Parisianou, 3th edn. 2015
3. Mark Gladwin, William Trattler, C. Scott Mahan. Clinical Microbiology Made Ridiculously Simple. 6th edn. Medmaster, 2014
4. Warren Levinson. Review of Medical Microbiology and Immunology. 13th edn. Lange Medical Books, 2014
5. Franklin T J, Snow G A. Biochemistry and Molecular Biology of antimicrobial Drug Action. 6th edn. Springer, New York, 2007

COURSE OUTLINE

(1) GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**5031-5032**	**COURSE SEMESTER**	**5th**
COURSE TITLE	**ORGAN SYSTEM HISTOLOGY-CYTOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**8**
Laboratory	**4**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**Specialized General Knowledge (SGK)**
PREREQUISITE COURSES:	**--**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE135/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The purpose of this course is to make students able to:

a) know, to distinguish, and to process the organs of the digestive, respiratory, urinary and genital (male and female) system.

b) take frozen sections, to make paraffin blocks, to operate cryostats, microtomes, and to perform special stains for the organs of each system of the human body.

c) Observe microscopically the above organic systems.

d) prepare cytological smears.

After successful completion of this course the student will be able to:

- Be aware macroscopically and microscopically the various organs of the digestive, respiratory, urinary, genital (male, female), endocrine system, skin and appendages, organs of vision and audition.
- Prepare microscopic preparations and cytological smears
- Color histological preparations with various common and special staining techniques from various organs of the digestive, respiratory, urinary and male and female genital tract

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

Production of new research ideas …….
• Working independently • Search for, analysis and synthesis of data and information, with the use of the necessary technology • Working in an interdisciplinary environment • Production of free, creative and inductive thinking • Production of new research ideas

(3) SYLLABUS

Theory

1. **Respiratory System**. Detailed description of the microscopic structure of the organs which constitute the respiratory system in relation to their function.
2. **Digestive System. I. Upper Gastrointestinal Tract:** Detailed description of the microscopic structure of the organs of the upper digestive tract in combination with their function. Oral cavity, tongue, teeth, esophagus, stomach.
3. **Digestive System. II. Lower Gastrointestinal Tract:** Detailed description of the microscopic structure of the organs of the lower digestive tract according to their function. Small intestine (Duodenum-jejunum-ileum). Large intestine. (cecum and appendix-ascending colon–transverse colon-descending colon-sigmoid colon-rectum and anal canal). Histological differences between small and large intestine.
4. **Digestive System. III. Digestive Glands:** Detailed microscopic description of the liver, pancreas and major salivary glands in relation to their function.
5. **Urinary System.** Detailed microscopic description of the structure of the parts of secretion and excretion of the urinary tract in relation to their function. Reproductive system of a woman. I. Detailed microscopic description of organs of the female system combined with their operation. Menstrual cycle
6. **Female Reproductive System I:** Detailed microscopic description of organs of the female genital system according to their function. Menstrual cycle of female reproductive system.
7. **Female Reproductive System II:** Fertilization. Development of the placenta and breastfeeding. Histological changes of the mammary gland during puberty and pregnancy.
8. **Male Genital system.** Detailed description of the organs of the male genital tract in relation to their function. Spermatogenesis-Transport and maturation of spermatozoa.
9. **Neuroendocrine system.** Detailed microscopic description of hypothalamus-pituitary system and endocrine glands in relation to their function.
10. **Endocrine System.** Detailed microscopic description of the basic endocrine glands in

relation to their function.

11. **Sensory organs: Audition and Vision.** Microscopic description of the basic histological structure and function.

12. **Integument and Appendages:** Microscopic description of the basic histological structure of skin and its appendages (hair, sweat glands, sebaceous glands) and function basics Cytology

13. **Basic elements of Cytology.** Morphology of the basic cytological smears (test-Pap).

Laboratory

The **laboratory exercises** are performed in a histology-cytology laboratory equipped with the necessary machineries-reagents-staining and the necessary microscopes and concern:

1. Information about the laboratory, the rules of operation and safety of the material. Postmortem lesions (autopsy), cutting incisions, fixation, in general. Consolidation of differences in vivo and in vitro, advantages and disadvantages. Presentation of some frequent fixative (fixative) substances such as formaldehyde (gas), formaldehyde solution 10% (formalin), formalin solution, glacial acetic acid, 70-100% ethyl alcohol, zinc chloride, bitter acid, potassium dichromate (salt). Advantages-disadvantages. Microscopic observation of various cells.
2. Solutions of fixative substances. Formalin solution, such as, saline solution of neutral formalin, formaldehyde sodium, sodium acetate, formaldehyde sodium-ammonium bromide, alcohol-formalin solution, acetic acid. Formaldehyde staining (method of removing the color of formaldehyde), branded fixative fluids (Zanker solution, Helly, Bouin, Carnoy, Clarke, Newcomer, Orth and other laboratory-related possibilities). Advantages- disadvantages. Microscopic observation of epithelial tissue.

3. Desalination (Perenyl method-nitric acid-formic acid-sodium citrate solution, (electrolysis method), control of desalination termination. Dehydration-dehydration factors (ethyl alcohol, methanol, acetone). Advantages-disadvantages. Clarification and clarifying agents. Microscopic observation of connective tissue types.

4. Paraffin histokinette, operation, programming. Microtomes, types, (rotary, rolling with control and adjustment of cutting parameters), and care of the cutting knife, sharpening tool, disposable knifes. Microscopic observation of cartilaginous and osseous tissue.
5. Microsections (taking paraffin cuttings), suspended tissue bath, band-shaped cuttings and their in situ separation, microscopy slides and a Mayer case. Problems in receiving cuttings. Deparaffination of cross sections, hydration and staining. Staining: Weigert's Iron-hematoxilin, Hematoxylin-eosin, Periodic Acid Schiff Stain (P.A.S). and other possibilities depending on the laboratory. Differentiation for hematoxylin. Microscopic observation of types of muscle tissue (skeletal-cardiac-smooth (visceral).

6. Deparaffination of cross sections, hydration and staining of these (1% stock-reserve of eosin solution from eosin-phloxine for staining the sections with hematoxylin-eosin), desiccation (drying), classification (separation), creation of slides and coverage with balm of Canada. Regular staining with Mayer's hematoxylin-eosin. Microscopic observation of neural tissue types.

7. Staining sections from different viscera sites by the May Grunwald-Giemsa method, Congo's Alkaline Red method. Staining of sections from various organs positions by the

Bielschowsky method, Gomori tricolor stain method. Staining of sections from various organs positions by Masson's trichrome stain method and staining by Periodic Acid Schiff's method (P.A.S.). Microscopic observation of viscera (organs of abdominal wall).

8. Frozen section (rapid biopsy), cryotomes, cryostats, receiving cuttings and staining with thionine and fast-action hematoxylin-eosin. Inclusion of gelatin, receiving sections and staining them. Celloidin embedding (incubation), receiving cuttings and staining. Microscopy.

9. Basic principles of exfoliative cytology, search methods, material preparation. Smear of the oral cavity, fixation and Giemsa staining, coating, microscopy, archiving.

10. Pap test, historical overview, purpose, methods of material preparation. Smear of the oral cavity, fixation and staining of smears.

11. Classification of upper-lower digestive, respiratory organs, and special staining of the organs of these systems, microscopy and imaging.

12. Classification of organs of digestive glands, urinary tract, and special staining of the organs of these systems, microscopy and imaging.

13. Classification of organs of genital tract (male-female) and special staining of the organs of these systems, microscopy and imaging.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation and • Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly • Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, informations for the attendance of congresses and seminars related to the teaching lesson of the academic course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory*	

Activity	***Semester workload***
Lectures. Contributions and Lectures with the use of audiovisual	90

practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc. The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	instruments.	
	Laboratory Exercise, Field Exercise, in small groups of 20-25 students.	120
	Course total	***210***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory** Writing Final Examination (100%) which includes: • multiple choice questionnaires • short-answer questions **Laboratory** **5.** Oral/ Writing final Examination with short-answer questions **6.** Essay/report for the laboratory part (optional)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Mescher L. Antony Junqueira's Basic Histology. 6th Greek edition, Broken Hill Publishers Ltd, Cyprus, 2015

2. Kierszenbaun L. Abraham & Laura L. Tres. Histology and Cell Biology. An Introduction to Pathology. 3rd Greek edition, Broken Hill Publishers Ltd, Cyprus, 2013
3. Carlson M. Bruce. Human Embryology and Developmental Biology. 4th Greek edition, Broken Hill Publishers Ltd, Cyprus, 2013
4. Ovalle K. William and Patrick C. Nahirney. F. Netter's Histology. 1st Greek. edition, Broken Hill Publishers Ltd, Cyprus, 2011
5. Anthouli-Anagnostopoulou Fr. Histopathology with elements of Oncology. Basic Knowledge. 1st editionη, Medical Editions, P.Ch. Paschalides, Athens 2009.
6. Manthos Anastasios. Aristotle University of Thessaloniki. Atlas of Histology. Medical Editions, P.Ch. Paschalides, Athens, 2006
7. Moore L. K. Embryology: The Human body formation before birth. Broken Hill Publishers Ltd, Cyprus, 2016
8. Mescher L. Antony Junqueira's Basic Histology. 13th edt, Mc Grow Hill Companies, Ins., USA, 2013
9. Kierszenbaun L. Abraham & Laura L. Tres. Histology and Cell Biology. An introduction to Pathology. 4th edt, Sanders, Elsevier, Philadelphia, 2012
10. Carlson M. Bruce. Human Embryology and Developmental Biology. Mosby, Elsevier, Philadelphia, 2009
11. Ovalle K. William and Patrick C. Nahirney. F. Netter's Essential Histology. Sanders, Elsevier, Philadelphia, 2008
12. Leslie P. Gartner. Histology, 3rd Greek and 4th English edition, Editions Parisianou, S.A., Athens, 2018
13. Michael Sotirios. Histology. 1st edition, Kyriakidis editions, Athens, 2015

-Related academic journals:

1. Histology and Histopathology, ISSN 02133911, Spain
2. European Journal of Cell Biology, ISSN 0179335, Germany
3. Histopathology, ISSN 13652559, 0309-0167, UK
4. Cytopathology, ISSN 09565507, 13652303, UK
5. Diagnostic Histopathology, ISSN 17562317, UK
6. Analytical and Quantitative Cytology and Histology, ISSN 08846812, USA
7. Microscopy Research and Technique, ISSN 1059-910X, USA
8. Acta Cytologica, ISSN 0001557, USA
9. International Journal of Clinical and Experimental Pathology, ISSN 19362625, USA

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	5041-5042	**SEMESTER**	5th
COURSE TITLE	CLINICAL CHEMISTRY I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Theoretical lessons	4	7
Laboratory lessons	3	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Moodle.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The student at the end of the lesson will be familiar with the:

- basic quality standards of In Vitro Diagnostics products and the statistical tests of their verification from the laboratory staff,
- principles of the statistical internal quality control (IQC) and external quality control (EQC),
- biochemical control of liver and kidney
- biochemical control of carbohydrates, lipids and uric acids,
- basic proteins in plasma,
- chromomeric analyses (end point, kinetic enzymatic analysis)
- principles and use of biochemical analyzers.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information with the use of the necessary technology

Production of new research ideas

Working independently

Working in an interdisciplinary environment

3. SYLLABUS

Theoretical courses

1. The work and the procedures of the Clinical Chemistry laboratory and its relation with the other departments of health organization. Which is the scientific scope of clinical chemistry.
2. The chromomeric analysis, the basic principles of photometry.
3. The modern biochemical analysers. The evolution of automatic analysers, the modern pre-analytical and post-analytical systems.
4. The IVDs reagents, quality control and calibration materials, IVDs reagents European regulations.
5. Introduction to the principles of quality control. The principles and the mathematic parameters of biological variance.
6. The internal quality control. The meaning of analytical error in clinical chemistry. The basic principles of internal quality control. The meaning of control diagrams. The Levey-Jennings diagram.
7. The external quality control. The management of external quality control assessment schemes. The control diagrams of external quality control.
8. The role of the most important plasma proteins. The five basic protein fractions in blood serum. The electrophoresis of proteins and its diagnostic value.
9. The biochemical monitor of kidney, the glomerular filtration rate. The acute and chronic kidney failure.
10. The metabolism of carbohydrates. Glucose metabolism and the role of insulin and glucagon. The biochemical monitor of diabetes.
11. The lipid metabolism. The metabolism of lipids in the organism. The diagnostic value of lipids, lipoproteins and the most important apoproteins. The biochemical monitor of lipids and lipoproteins.
12. The biochemical monitor of liver. Types and causes of liver disease.
13. The uric acid metabolism and the diagnostic value of its monitoring.

Laboratory courses:

1. Glycaemic control. The measurement of glucose with an end point photometric method. The Lambert-Beer method.
2. The uric acid's measurement in photometers and biochemical analysers. IVDs reagents. Their performance characteristics of IVD reagents according to European directives.
3. The kidney monitoring (I). The measurement of urea, using kinetic method and endpoint method. The calculation of repeatability, reproducibility and precision.
4. The kidney monitoring (II). The measurement of creatine in biochemical analysers and photometers, using kinetic methods. The meaning and the calculation of analytic sensitivity and quantification.
5. The lipidemic monitoring (I). The measurement of cholesterol and triglycerides. The meaning and the calculation of recovery.
6. The lipidemic monitoring (II). The measurement of HDL in photometer using protein precipitation method and in biochemical analyser using antibodies. The measurement of LDL, using calculational and biochemical method. The meaning of accuracy and correctness.

7. The plasma protein monitoring. The measurement o total protein and albumin, using photometric endpoint methods in photometers and biochemical analysers. The meaning of uncertainty.
8. The skeletal system monitoring. The measurement of calcium and phosphorus in serum, using photometric endpoint methods in photometers and biochemical analysers. The meaning of diagnostic sensitivity and specificity.
9. The liver monitoring (I). The measurement of total and direct bilirubin in photometer and biochemical analysers. The diagnostic markers.
10. The liver monitoring (II). The measurement of the enzymes GOT/GPT, using kinetic methods. The ROC curves.
11. The measurement of magnesium. The quality control and calibration procedures of biochemical analysers.
12. The calibration of instruments (pipettes, analytical balances).
13. Practical evaluation.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face teaching, Laboratory education</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching, laboratory education
Communication with students, Teaching through video and Kahoot tests</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures with audiovisual media</td><td>100</td></tr>
<tr><td>Laboratory practice</td><td>60</td></tr>
<tr><td>Individual project</td><td>20</td></tr>
<tr><td>Student’s study hours</td><td>30</td></tr>
<tr><td>Course total</td><td>210</td></tr>
<tr><td></td><td></td></tr>
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</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory:
Multiple choice questionnaires
Short-answer questions

Laboratory:
Laboratory work
Short-answer questions
Problem solving</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Marshall W, Bangert S. Clinical Chemistry, Εκδόσεις Broken Hill Publishers Ltd, 2000

2. Plageras P, Papaioannou A. Special courses of clinical chemistry. Broken Hill Publishers Ltd 2012

3. William J. Marshall & Márta Lapsley & Andrew Day & Ruth Ayling. Clinical Biochemistry: Metabolic and Clinical Aspects. Utopia Publishers 2021

4. G. Beckett G. Walker S. RAE P, Ashby P. Lecture notes in Clinical Biochemistry, Parisianos Publishers 2010

5. Lieberman M, Marks A. Basic Medical Biochemistry of Marks: A clinical approach. Parisianos Publishers 2010

6. Baynes J, Domniczak M. Medical Biochemistry. Parisianos Publishers 2002.

- Related academic journals:

Clinical Chemistry

Clinical chemica acta

Journal of clinical chemistry and laboratory medicine

Journal of biomedical science

Critical Reviews in Clinical Laboratory Sciences

Biomarker Research

Advances in Clinical Chemistry

Biological Chemistry

Clinical Biochemist Reviewers

Proteomes

Lipids in health and disease

Proteomics - Clinical Applications

Metabolomics

Disease markers

Journal of Circulating Biomarkers

9.6.3 6th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCE - MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6011-6012	SEMESTER	6th
COURSE TITLE	HEMATOLOGY II		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		WEEKLY TEACHIN GHOURS	CREDITS
LECTURES		4	
LABORATORY EXERCISES		2	
			7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIAL BACKGROUND		
PREREQUISITE COURSES:	NONE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE126/		

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A* *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* *criptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* *delines for writing Learning Outcomes*
Upon successful completion of the course the students will be able to: Perform specialized hematological laboratory tests. Have an understanding of general blood testing for blood malignancies and haemostasis disorders. Have knowledge of all blood malignancies. Distinguish disorders of hemostasis, coagulation and fibrinolysis. Collaborate with patients for specialized blood tests. Use the hematology analyzers of the laboratory as well as the flow cytometry for the specialized laboratory control of the Hematological diseases. Collaborate with his classmates to create and present a complex hematological passage. The aim of the course is to enable students to distinguish and process the various elements of the blood in malignant diseases of the hematopoietic tissue, such as leukemias, lymphomas, etc. both in the peripheral bloodand in the bone marrow. Also to inform students about the hemorrhagic diseases as well as the mechanism of hemostasis and thrombophilia. Students who successfully complete the course are able to know the classification of leukemias according to theWorld Health Organization and according to FAB (French, American, British) and the clinical picture and the laboratory approach. They also will be able to know the mechanism of coagulation, hemorrhagic diseases (acquired and inherited) and the laboratory approach of coagulation disorders.

Search, analysis and synthesis of data and information, using the necessary technologies.
Working independently.
Teamwork.
Work in an interdisciplinary environment.
Production of free, creative and inductive thinking.

3. SYLLABUS

1. Differential diagnosis of white blood cells.
2. Myeloproliferative diseases (A).
3. Myeloproliferative diseases (B).
4. Myelodysplastic syndrome.
5. Acute myelogenous leukemias.
6. Acute lymphoblastic leukemia.
7. Chronic lymphogenic leukemia
8. Hodgkin's lymphoma.
9. Non-Hodgkin lymphomas (general part).
10. Differential diagnosis of coagulation disorders and hemostasis.
11. Vascular wall disorders - Vascular purpura and hereditary platelet dysfunction (thrombosis)
12. Acquired functional platelet disorders. Thrombocytopenia - general introduction and diagnosticapproach. Hereditary thrombocytopenia. Acquired thrombocytopenia.
13. Diffuse intravascular coagulation.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures in the classroom. Face-to-face laboratoryexercises in Hematology-Blood donation Laboratory.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and use of e-mail and the website of the Department for communication with students. Use of the e-class for the posting and distribution of scientific articles, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	120
Laboratory practice	58
Course total	178

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theoretical part Written final exams (100%) that includes: - Long answer Questions - Multiple Choice Test - Short Answer Questions Laboratory examination - Written / oral final exam with multiple choice and long answer questions. - Capability of blood smear observation in microscopy

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Marshall A. Lichtman, Thomas J. Kipps, Uri Seligsohn, Kenneth Kaushansky, Josef T. Prchal. Williams Hematology, 8e The McGraw-Hill Companies, Inc, 2010.
- Ronald Hoffman MD, Edward J. Benz Jr. MD. Hematology: Basic Principles and Practice, Expert Consult Premium Edition - Enhanced Online Features and Print, 6e, 2012.

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**DEPARTMENT OF BIOMEDICAL SCIENCES**		
LEVEL OF STUDIES	**UNDERGRADUATE**		
COURSE CODE	**6021-6022**	**SEMESTER**	**6th**
COURSE TITLE	**IMMUNOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES	4	
LABORATORY COURSES	3	8
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIALIZED GENERAL KNOWLEDGE
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	**https://eclass.uniwa.gr/modules/document/?course=BISC135 &** **https://eclass.uniwa.gr/modules/document/index.php?course=BISC135&openDir=/5cab84d1nglr**

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Purpose

This course covers an integrated introduction to the immune system of the body. Course materials include lectures about the structure, the function, and genetics of system molecules such as antibodies, T and B lymphocyte receptors, major histocompatibility complex (MHC) molecules, cytokines, as well as development and activation of lymphocytes. The course, also, refers to the binding of antigens to antigen-presenting cells (APCs), as well as to the types of immune response and how the immune system responses to infections by bacteria, fungi, viruses, protozoa, and helminths.

In addition, the basic processes of immunization and immunodeficiency, immune tolerance and autoimmune disorders and tumor immunity are presented. Emphasis is given on recent advances in immunology regarding the diagnosis and therapeutic interventions (ie. monoclonal antibodies and recombinant molecules that induce immunity).

The course aims to enable students to understand the function of the immune system and its contribution to defense and maintenance of the homeostasis of organisms. An additional goal of the course is to help students understand the importance of testing the humoral and cellular immune response for the detection of infections as well as primary or acquired immunodeficiency.

Upon completion of the course the students will be able to:

•Know the cells of the immune system, including their characteristics, recognition mechanisms, tissue distribution, and cell to cell interactions.

•Understand how immune responses are induced, the related molecular mechanisms and the regulation of immune responses at cellular level.

•Distinguish the basic functions of the immune system in infectious diseases.

•Perform laboratory procedures carefully, produce accurate results, understand the theoretical basis of the techniques used in the laboratory and present a complete review of the results and of the relative conclusions

•Write a comprehensive review of current knowledge and advances on certain topics of Immunology

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Search for, analysis and synthesis of data and information with the use of the necessary technology
- Concentration and responsibility for performing laboratory activities.
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment
- Production of new research ideas
- Promoting free, creative and inductive thinking

3. SYLLABUS

Theory

1. **Introduction to the Immune System.** The main milestones in the evolution of the science of Immunology. Cells, tissues and organs of the Immune system.
2. **Antigen binding molecules I.** Immunoglobulins (basic structure and variants of the structure of immunoglobulins, classes and subclasses of immunoglobulins, antibody synthesis). **The complement system** via the classic and alternative pathway. The importance of complement deficiencies and how the complement is determined.
3. **Antigen binding molecules II. T cell receptors and MHC.** Structure and biological significance of T cell receptors and major histocompatibility complex molecules. Immunobiology of transplants.
4. **Types of immune response.** Mechanisms of innate immunity. Initiation of the immune response with innate defenses. Presentation of the antigen, co-stimulation and cell activation pathways.
5. **Parts of the immune system. Κύρια εκτελεστικά σκέλη της ανοσοαπάντησης**. TH2 immune response with antibody production, TH1 immune response and mononuclear phagocytes, cytotoxicity (cytotoxic cells and NK cells). Cytokine production.
6. **Defense against infectious agents.** Immune responses to various types of infections. Increased susceptibility to specific infections due to immunodeficiency. Flexibility of the immune system and adaptability of pathogens.
7. **Immunity against bacteria and fungi.**
8. **Immunity against viruses**
9. **Immunity to Protozoa and Worms**
10. **Primary immunodeficiency.** Deficiency of congenital immunity. T cell deficiency. B cell deficiency. Deficiency of myelogenous cells. Stem cell deficiency.
11. **AIDS and secondary immunodeficiency. Vaccination.**
12. **Immune tolerance, autoimmunity and autoimmune diseases.** Etiology of the immune reaction. Pathogenetic mechanisms in autoimmune diseases.
13. **Transplantation and transplant rejection. Tumor immunology.** Disposal mechanisms, rejection prevention. Tumor immunotherapy
14. **Hypersensitivity type I, II, III, IV.** Anaphylactic sensitivity, atopic allergy, Cytotoxic sensitivity to antibodies, Hypersensitivity to immune complexes, Slow-type hypersensitivity, Stimulating hypersensitivity

Laboratory

The laboratory part of the course will include theory and practice in:

1. Immunization and isolation techniques of white blood cells and lymphocytes. Animal immunization and antibody production.
2. Antigen and antibody interactions, *in vitro*. Precipitation Analysis by Diffusion in Gels. Ouchterlony double immunodiffusion and radial immunodiffusion.
3. Hemagglutination reactions
4. Electrophoresis of proteins in diagnosis of immunological deficiencies. Rocket and

opposite immunoelectrophoresis.

5. Immunofixation, nephelometry, turbidity.
6. Flow Cytometry. Measurement of CD^{4+} cells and CD^{8+} cells after staining with anti-CD^{4+} and anti- CD^{8+}monoclonical antibodies.
7. ELISA (I). Quantitative immunoassay of autoantibodies against isolated nuclear antigens (ENA profile).
8. ELISA (II). Quantitative immunoassay of autoantibodies against Thyroid peroxidase (anti-TPO).
9. Indirect immunofluorescence (I). Binding and localization of autoantibodies in the serum of patients against nuclear antigens in HEp-2 cells
10. Indirect immunofluorescence (II).
11. Determination of autoantibodies against double-stranded DNA (anti-ds-DNA) in Crithidia luciliae and anti-neutrophilic cytoplasmic antibodies (ANCA).
12. Line or dot immunoblotting
13. Immunochromatography, hemolytic supplement
14. Determination of HLA. Cytotoxicity method.

All laboratory exercises are performed in the Immunology Laboratory equipped with the appropriate, calibrated instruments (fluorescence microscope, cytometer, spectrophotometer, electrophoresis devices, centrifuges, Vortex, water bath and light field microscope).

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Classrooms and amphitheaters and at Laboratory of Immunology face to face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of ICT in teaching • Presentations using Power point • Connection to website • Usage of search engines such as HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Usage of the web mail and website of the Department for communication with students and provide relative information • Usage of e class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures- Audiovisual Presentations	100
Laboratory practice- Students in teams (members 10-15)	87
Individual study	20
Course total	**207**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theory Written final exam that includes: . Essay Questions . Multiple Choice Questionnaires . Short Answer Questions -Laboratory Written/Oral final exam that includes: . Multiple Choice Questionnaires . Exercises

5. ATTACHED BIBLIOGRAPHY

Greek

1. GGoldsby R., Kindt T., Kuby J., Osborne B. Immunology (2nd Edition). Broken Hill ISBN: 9789963716142
2. AAbbas Abul K., Lichtman Andrew H. Basic Immunology-Functions and Disorders of the Immune System (2nd Edition). Broken Hill Publishers, 2018 ISBN: 9789963274505
3. MMpoura Panagiota. Clinical Immunology (3rd Edition) University Studio Press 2015 ISBN-978-960-12-2192-2
4. MDale David, Brostoff Jonathan, Roth B. David, Roitt Ivan. Immunology. Parisianou S.A. Publications 2010, ISBN -9789603946724
5. PPavlatou M. Immunology. Litsas Medical Publications 2000, ISBN- 960-372-080-1
6. GYermenis E. Anastasios. Medical Immunology, Papazisis Publications 2000, ISBN-9789600213973

English

1. RSandy Q. Cron, Edward M. Behrens. Cytocine storm Syndrome 1st ed. Edition 2019 Springer. ISBN: 978-3030220938
2. AAbul Abbas, Andrew H. Lichtman, Shiv Pillai. Cellular and Molecular Immunology,9th Edition Elsevier 2017, ISBN-9780323479783
3. AAbul K. Abbas & Andrew H. Lichtman & Shiv Pillai. Basic Immunology, 5th Edition Elsevier 2016, ISBN-9780323390828
4. DDavid Male & Jonathan Brostoff & David Roth & Ivan Roitt. Immunology, 8th Edition Saunders 2013, ISBN -9780323080583

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6031	**SEMESTER**	6th
COURSE TITLE	ACCREDITATION- CERTIFICATION		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Theory	2	2
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Moodle.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students at the end of the lesson will be familiar with the:

- quality terms such as certification, accreditation, uncertainty, total quality management, quality control
- accreditation with the ISO 15189 in clinical laboratories,
- basic principles of ISO 17025 and ISO 9001.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Search for, analysis and synthesis of data and information with the use of the necessary technology *Working independently* *Working in an interdisciplinary environment*	

3. SYLLABUS

1. The meaning of quality. The certification and accreditation procedures. Which organizations provide accreditation certificates?
2. Introduction to the ISO 9001 standard. What is its application in the field of health. Implementation of Directive CEN / TS 15224.
3. The quality documents. What are they? What are their similarities and differences? Individual work: the writing of a quality document with the quality policy of a laboratory.
4. The general requirements of the standards ISO 9001, ISO 17025, ISO 15189 (I). What are the similarities and what are the differences. The role of the laboratory manager, the quality manager and the staff members.
5. The general requirements of the standards ISO 9001, ISO 17025, ISO 15189 (II). Equipment maintenance. The evaluation of suppliers and super contractors. Individual work: creation of a quality system for the maintenance of household equipment.
6. The general requirements of the standards ISO 9001, ISO 17025, ISO 15189 (III). The requirements of the standards for the environmental conditions, the use of the records, the quality of life of the staff. Individual work: write a document/guideline for the monitoring and improvement of the environmental conditions of a biomedical laboratory.
7. The calibration of the measuring equipment. The concept of calibration. Which instruments

are calibrated and by which method. The concept of random, systematic error and uncertainty.

8. The requirements of ISO 15189, ISO 17025 for pre-analytical procedures. What requirements must be met at the pre-analytical stage of clinical or other trials. Individual work: to write a work instruction for the collection of samples and their processing.
9. Internal operation control of pipettes, cylinders, scales and thermometers. Practice exercise in the laboratory.
10. The quality control of the analysis. The differences between internal and external quality control. The control diagrams. Individual work: creating control charts and calculating type A uncertainty.
11. The concept of uncertainty. Calculation of type B uncertainty and extended uncertainty using calibration and quality control data. Individual work: calculation of the extended uncertainty of certain given data.
12. The requirements of ISO 15189, ISO 17025 for meta-analytical processes. What requirements must be met at the post-clinical stage of clinical or other trials? Individual work: to write a work instruction for the secretarial support of a laboratory.
13. The basic principles of audit. Internal and external audit.

4. TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching, Short assays	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, Communication with students, Teaching through video	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures with audiovisual media	20
	Individual project	20
	Student's study hours	20
	Course total	60

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Multiple choice questionnaires Short assays during the courses

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.Mavridou A.Accreditation of biomedical laboratories. Paschalides publishers, 2010

2. Mathioudakis M. Assessment, quality of measure, uncertainty, Laboratory Greek union, 2004

3. ISO/ILAC/IEC 17025/2005

4. ISO 9001: 2015.

1. ISO 15189/2012

2. EN 15224:2012

3. EURACHEM / CITAC Guide CG 4. Quantifying Uncertainty in Analytical Measurement, 3rd Edition, 2012.

- Related academic journals:

American Journal of Medical Quality
Journal on Quality and Patient Safety
Journal for Healthcare Quality
Journal of Clinical Outcomes Management

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**			
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**			
LEVEL OF STUDIES	**Undergraduate studies**			
COURSE CODE	**6041-6042**	**SEMESTER**	**6th**	
COURSE TITLE	**Virology**			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures			3	6
Laboratory exercises			3	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialty Course			
PREREQUISITE COURSES:	–			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of*

Aim of the course:

The course's theoretical syllabus aims to introduce the students to the basic concept of virology and the study of viruses, according to their physiology and morphology, genetics, as well as their biochemical mechanism which binds the relationship between the host and the virus. Moreover, the effect of the viral infections, the viral active multiplication in host cells, pathogenesis, therapy, and prevention of infection should be apprehended, too. The purpose of the course is also the acquisition of skills in isolation, detection and identification of viruses using serological and molecular methods.

Objectives and expected learning outcomes:

Upon completion of the course, students will be able to know and understand:

- The general molecular and biochemical properties of the viruses, their structure, the virioids' structure, and phages' structure.
- The methods used in laboratory and diagnostic Virology, as well as being able to practice the techniques and methods demonstrated in laboratory exercises.
- The epidemiology, transmission, pathogenesis and the subsequent viral life circle which is related to selected viral diseases.
- The mechanism of pathogenesis and toxicity of viruses which infect humans and the mechanisms of human immune response and defense.
- The prevention of viral infections through immunization as well as the mechanisms of viral infection.
- The clinical and epidemiological viral characteristics and the diseases they cause at humans.
- The diagnostic virology by the application of a variety of serological and molecular techniques related to the transmission, detection, identification, isolation and quantification of the viruses.
- The modern methods of laboratory Virology in clinical trial.
- How to use general texts, reference books and series of other sources in order to acquire further knowledge during the abiding independent knowledge.
- The conduction of a set of laboratory exercises which indicate the development of practical scientific qualifications.

The conduction of a set of laboratory exercises which indicate the development of practical scientific qualifications. General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations
Decision-making

Working independently
Team work

Working in an international environment Working in an interdisciplinary environment
Production of new research ideas

Project planning and management Respect for difference and multiculturalism Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others

- *Search, analyze and compose data and information, using the appropriate technology.*
- *Autonomous individual work*
- *Teamwork*
- *Work in an interdisciplinary environment*
- *Work at international environment*
- *Provide new scientific ideas*
- *Promote free, creative and inductive thinking*

3. SYLLABUS

Lectures:

1. **Introduction to Virology**: General viral abilities. General classification and nomenclature, structure, biochemical properties and their study.
2. **Methods used in Virology**: Introduction to laboratory and diagnostic methods used in Virology. Viral isolation and growing. Centrifuging, structural studies of viruses and viroids (prions). Electrophoretic methods. Molecular methods. Methods of detecting viruses and viral parts. Transfection methods. Viral genetics.
3. **Viral structure and transmission**: Genetic material. Viral proteins. Capsids and viral membranes. Other viral particles. Viral transmission and host cells. Viral attachment and entrance in host cells.
4. **Viral replication**: Types of viral genomes. Polymerases and viral amplification. dsDNA viruses. dsRNA viruses. ssRNA viruses. Reverse transcription and reverse transcriptase. DNA multiplication. dsRNA multiplication.
5. **Viral pathogenesis and oncoviruses**: How viruses cause diseases. Factors that affect the result of a viral infection. Productive and non-productive viral infections. Defense and tolerance of human organisms against viral infections.
6. **Viral classification and grouping**. Most important (old and emerging) viral infections.
7. **Viruses with positive single stranded RNA**: (Picornaviruses: polio, hepatitis A, enterovirus), Astroviruses. Calciviruses. Hepatitis E. Togaviruses (mosquito-borne, Chikungunya και teratogenic rubella). Flaviviruses (yellow fever, dengue fever, hepatitis C) Coronoviruses (SARS CoV and MERS CoV)
8. **Viruses with negative single stranded RNA**: Orthomyxoviridae (Influenza A, B, C). Arenaviruses (Lassa and hemorrhagic fevers). Bunyaviruses (Hanta, phlebo, and nairo). Paramyxoviruses (measles, RSV, mumps, parainfluenza, metapneumovirus). Filoviruses (zoonotic Marburg and Ebola) and Rabies
9. **Viruses with double stranded RNA (dsRNA viruses)**: Reoviruses, Noroviruses causing diarrhea.
10. **Viruses with double stranded DNA (dsDNA viruses) and viruses with single stranded DNA (ssDNA viruses)**: Papillomaviruses, Palyomaviruses, Poxviruses, Herpesviruses (herpetic lesions, zoster, cancer and encephalitis). Adenoviruses (respiratory system, eye and gastrointestinal tract). Smallpox. Parvoviruses (Parvovirus-ssDNA viruses)
11. **Viruses with positive single stranded RNA [(+)ssRNA viruses] and viruses with circular double stranded DNA (c dsDNA viruses)**: Retroviruses (HIV-1 and -2 and HTLV viruses). Hepadnaviruses: hepatitis B and D.
12. **Other viruses**: Bacterial viruses-Phages. Viroids (prions).
13. **Applications in Clinical Virology**: Laboratory of clinical Virology. Viral infection control. Anti-viral agents and therapies.
14.

Laboratory exercises:

1) Introduction of the laboratory and diagnostic Virology. Virology laboratory equipment, Principles of Laboratory Safety. 2) Immunoenzymatic methods for diagnose viral infections (for example Infectious Monucleosis, the Australia Antigen of the hepatitis B-HBsAg, 3) Immunographic assays of antibody diagnose against viral infections (for instance Epstain-Barr Virus and hepatitis C virus) and accumulation assays (e.g. Adenoviruses). 4) Detection of viral compounds and diagnosis of viral infections with with protein immunoblotting methods (Western Blot Assay) (for example HIV-2 and HIV-2). 5) Nucleic acids isolation (DNA and/or RNA) for the molecular detection of viral infections. 6) Polymerase Chain Reaction (PCR) and real time polymerase chain reaction for the detection and/or identification of viral infections (for example HBV,HCV and HIV-1). 7) Identification of viral infection (e.g. HPV

DNA) with restriction enzymes. 8) Cell cultures and spreading of specific cellular density. 9) Function of MSC II cabinet for laboratory experiments with viruses. 10) Plaque assay/TCID50. 11) In-vitro cellular infection. Inhibiting accumulation method. 12) Viral isolation and harvesting from infected cells. 13) Viral freezing and defreezing. 14) Genotyping/subtyping using bioinformatics or online applications on specialized databases. 15) Viral genome sequencing (for example the genome of HBV, HCV, HIV-1 or/and HPV) using Sanger sequencing and Next Generation Deep sequencing.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively. • Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures	39
Laboratory exercises	39
Interactive Teaching	6
Bibliography study and analysis	26
Study preparation	13
Written assignment	13
Educational visits/excursions	0
Independent study	41
Course total	177

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory-lectures:** 1. Final writing exam (60%) which includes: • Multiple choice questions • Quick Answer Questions • Essay Tests • Judgment questions, theory comprehending and evaluation of reasoning • Problem Solving The students after receiving their exam topics they are informed about the method of assessment for each group of topics, depending on the degree of difficulty and it is also taken under consideration the thoroughness, articulacy, critical thinking and the language efficiency of the answer given. 2. Assignment Presentation (40%) Theory is examined at last. However, in case of accomplishing an individually or team project, its evaluation can be involved in the final course's degree up to 40%. **Laboratory:** Final examination of laboratory capability Oral examination Intermediate tests or assessment exercises Laboratory exercises The laboratory exercises account for the 30% of the final courses grade. The laboratory is examined in parallel with the final exams, as well as during the conduction of the laboratory exercises, although in some exercises an essay and results process and analysis is demanded, which are co-estimated to the final laboratory grade.

5. ATTACHED BIBLIOGRAPHY

Suggested Bibliography

A. ***In Greek***

1. *Murray P, Rosenthal K, Pfealler M. Medical Microbiology (Translated in Greek edn). PARISIANOU PUBLICATIONS, Athens, 2012.*
2. *Greenwood D, Slack R, Peutherer J, Barer M. Medical Microbiology (Translated in Greek edn) BROKEN HILL PUBLISHERS LTD, 2012.*
3. *Nicolaos Poggas, Ekaterina Charvalou, Medical Microbiology. ODYSSEAS PUBHISHERS. Athens, 2011.*
4. *Helen Kalkani-Basiakou, Virology, ELLIN PUBLISHERS, Athens, Αθήνα 2008.*
5. *Haaheim L. R, Pattison J.R, Whitley R.J. A practical guide of Medical Virology (Translated in Greek edn) PARISIANOU PUBLICATIONS, Athens 2004*
6. *John Papanagiotou, Vasiliki Kyriazopoulou-Dalaina, Medical Microbiolgy and Virology. University Studio Press*
7. *John Papanagiotou, Vasiliki Kyriazopoulou-Dalaina, Introduction to Medical Microbiology, Virology and Immunology. University Studio Press*
8. *Tortora G.J., Funke B.R. Intro to Microbiology (Translated in Greek 2nd edn) BROKEN HILL PUBLISHERS LTD*
9. *Mims Cedric A.,Playfair J.,Roitt I.,Wakelin D.,WIlliams R. Microbiology (Translated in Greek edn) BROKEN HILL PUBLISHERS LTD*

B. ***In English***

1. *John Oxford, Paul Kellam, and Leslie CollierMurray P, Rosenthal K, Pfealler M. Human Virology. Fifth Edition. Oxford University Press. 2016*
2. *Mark Gladwin, William Trattler, C.Scott Mahan. Clinical Microbiology Made Ridiculously Simple. 6 edition. Medmaster 2014.*
3. *Warren Levinson . Review of Medical Microbiology and Immunology. 13 edition. Lange Medical Books. 2014*
4. *Dimmock N;J, Easton A.J, Lappard K.N. Introduction to modern virology. 6 edition, Blackwell 2007*

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6051 - 6052	**SEMESTER**	6th
COURSE TITLE	CLINICAL CHEMISTRY II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Theoretical lessons	3	7
Laboratory lessons	3	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Moodle.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students at the end of the lesson will be familiar with the: basic principles of enzyme immunoassays and chemiluminescence, way of calibration of immunoassays, use of immunoassay analyzers, hormones of pituitary gland, thyroid gland, adrenal glands, gonad glands, metabolism of calcium/phosphorus and the biochemical markers of osteoporosis, metabolism of iron and its biochemical markers,

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information with the use of the necessary technology

Production of new research ideas

Working independently

Working in an interdisciplinary environment

Team work

3. SYLLABUS

Theoretical courses

1. The kinetics of enzymes. The use of enzymes in diagnostic technology.
2. The metabolism of calcium, phosphorus and magnesium. The role of vitamin D.
3. The biochemical monitor of osteoporosis (markers of bone degradation and bone production).
4. The metabolism of iron. The importance of determining iron, iron-binding capacity, ferritin and transferrin.
5. Hormones of hypothalamus, pituitary and adrenal glands. The metabolic importance of hypothalamic hormones (GH-RH, Gn-RH, TRH, CRH) and anterior and posterior pituitary (TSH, LH, FSH, ACTH, PRL, GH, oxytocin, ADH).
6. The hormones of the thyroid gland. The metabolic significance and diagnostic role of T_4, T_3, TSH, TG, anti-TPO, anti-TG.
7. The hormones of the parathyroid gland and adrenal glands. The metabolic importance and the diagnostic role of the determination of parathyroid hormone (parathyroid gland) and cortisol, aldosterone, androgens, etc. (adrenal glands).
8. Hormones of male and female reproductive system. Hormones associated with sperm production and menstruation.
9. Biochemical monitor of pregnancy and prenatal control. The role of LH, FSH, estrogen, β-chorionic gonadotropin and other hormones that play a role in pregnancy.
10. The acid-base balance. The balance of water, sodium and potassium. Analytical methods for electrolytes' measurement in laboratory.
11. The homeostasis of hydrogen ions. The balance of blood gases. The regulation of hydrogen ions. Analytical methods for blood gases' measurement in laboratory.
12. Biochemical cancer markers. The role in the diagnosis and monitoring of anti-cancer treatment.
13. Drugs and their analytical measurement in laboratory.

Laboratory courses

1. Analytical measurement of serum iron with manual and automatic analytical method.
2. Analytical measurement of serum alkaline phosphatase by photometric kinetic method in photometers and biochemical analyzers.
3. Analytical measurement of lactic dehydrogenase in serum, CSF and other biological fluids. Training in immunochemistry analyzer.
4. Measurement of creatine kinase and CK-MB isoenzyme by photometric methods in photometers and biochemical analyzers. Training in immunochemistry analyzer.
5. Protein electrophoresis.
6. Enzyme electrophoresis.
7. The biochemical monitor of the peritoneal fluid. Determination of serum and peritoneal amylase. Training in immunochemistry analyzer.
8. The biochemical monitor of the cerebrospinal fluid (measurement of glucose,

LDH and proteins).
9. Measurement of creatinine clearance.
10. Competitive immunoenzymatic methods. Training in a competitive ELISA.
11. Non-competitive immunoenzymatic methods. Training in a non-competitive ELISA.
12. Measurement of fructose in sperm samples. Training in an electrolytes' analyzer.
13. Measurement of citric acid in sperm samples. The use of atomic absorption for the measurement of heavy metals.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching, Laboratory education
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, laboratory education Communication with students, Teaching through video and Kahoot tests
TEACHING METHODS *The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures with audiovisual media	77
Laboratory practice	60
Individual project	20
Student's study hours	20
Course total	177

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theory: Multiple choice questionnaires Short-answer questions Laboratory: Laboratory work Short-answer questions Problem solving

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Marshall W, Bangert S. Clinical Chemistry, Εκδόσεις Broken Hill Publishers Ltd, 2000

Plageras P, Papaioannou A. Special courses of clinical chemistry. Broken Hill Publishers Ltd 2012

William J. Marshall & Márta Lapsley & Andrew Day & Ruth Ayling. Clinical Biochemistry: Metabolic and Clinical Aspects. Utopia Publishers 2021

G. Beckett G. Walker S. RAE P, Ashby P. Lecture notes in Clinical Biochemistry, Parisianos Publishers 2010

Lieberman M, Marks A. Basic Medical Biochemistry of Marks: A clinical approach. Parisianos Publishers 2010

Baynes J, Domniczak M. Medical Biochemistry. Parisianos Publishers 2002.

- Related academic journals:

Clinical Chemistry
Clinical chemica acta
Journal of clinical chemistry and laboratory medicine
Journal of biomedical science
Critical Reviews in Clinical Laboratory Sciences
Biomarker Research
Advances in Clinical Chemistry

Biological Chemistry
Clinical Biochemist Reviewers
Proteomes
Lipids in health and disease
Proteomics - Clinical Applications
Metabolomics
Disease markers
Journal of Circulating Biomarkers

9.6.4 7th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCE - MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7011-7012	SEMESTER	7th
COURSE TITLE	TRANSFUSION THERAPY		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		WEEKLY TEACHING HOURS	CREDITS
LECTURES		3	
LABORATORY EXERCISES		2	
			6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIAL BACKGROUND		
PREREQUISITE COURSES:	NONE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE125/		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Upon successful completion of the course the students will be able to:

Perform specialized laboratory in Blood Donation.
Understand the multifaceted role of Transfusion Medicine (blood donors, pre-transfusion control, post-transfusion control)
Know the reactions from the transfusion.
Distinguish emergency transfusion.
Collaborate with patients for specialized blood testing.
Usesknowledge for safe blood and blood transfusions.
Collaborate with their classmates to create and present a complex hematological / hematological case.
The aim of this course is the students to understand the concept of Blood Donation and at the same time to become familiar with the laboratory and its standard laboratory procedures. Specifically to know what steps thereception for blood transfusion, the processing and preparation of derivatives (concentrated erythrocytes, whitened products, plasma, platelets), maintenance and preservation of blood and its derivatives, include. To know the main systems of blood groups, as well as their antigens and antibodies. To understand the direct and indirect complications of blood transfusions as well as the hemolytic disease of the newborn.

Students who successfully complete the course are able to work in a blood donation laboratory and deal with the objects of blood collection (history, blood collection), processing of whole blood units for the production ofderivatives and laboratory testing of blood donors.

General Competences

Search, analysis and synthesis of data and information, using the necessary technologies.
Working independently.
Teamwork.
Work in an interdisciplinary environment.
Production of free, creative and inductive thinking.

3. SYLLABUS

1. General principles of blood donation, historical background, organization of blood donation.
2. Blood donor selection Attracting and retaining volunteer blood donors.
3. Blood collection for Blood Donation. Reactions and immediate actions.
4. The system according to ABO.
5. The Rhesus system.
6. Other antigenic systems.
7. Detection of erythrocyte antibodies Hereditary hemolytic anemias. Autoimmune hemolytic anemia.
8. Blood and plasma derivatives. Production - Maintenance - Storage.
9. Indications for transfusion of red blood cells and blood products. Neonatal transfusion-blood transfusion.
10. White blood cell and platelet antibodies HLA systems and practical application.
11. Immediate and distant reactions from the transfusion of blood and its derivatives.
12. Transfusion pathogens.
13. Emerging diseases transmitted by transfusion.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures in the classroom. Face-to-face laboratoryexercises in Hematology-Blood donation Laboratory.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and use of e-mail and the website of the Department for communication with students. Use of the e-class for the posting and distribution of scientific articles, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	90
Laboratory practice	56
Course total	146

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Theoretical part Written final exams (100%) that includes: - Long answer Questions - Multiple Choice Test - Short Answer Questions Laboratory examination - Written / oral final exam with multiple choice and long answerquestions.

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals:

• Alice Maniatis, Phillipe van der Linden. Alternatives to Blood Transfusion in Transfusion Medicine.
Blackwell Publishing, 2011.

• AABB: Blood Transfusion Therapy: A Physician's Handbook, 10th Ed., 2011
• Christopher D. Hillyer, Leslie E. Silberstein. Blood Banking and Transfusion Medicine: BasicPrinciples and Practice, 2e Hardcover – November 1, 2006.

(1) GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**7021**	**SEMESTER**	**7th**
COURSE TITLE	**Clinical Microbiology**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	3
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Speciality Course		
PREREQUISITE COURSES:	_		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aim of the course:

The course's theoretical syllabus aims to introduce students to the application of Microbiology in laboratory and clinical practice. All microorganisms related to human infections are discussed by system and their early diagnosis with the help of clinical protocols proposed by European and National agencies, but also by recent and updated literature. Finally, it concludes with an introduction to the emerging infections and tropical diseases.

Objectives and expected learning outcomes:

Upon completion of the course, students will be able to know and understand:

- Bacteria, viruses, fungi and parasites that cause infections in humans by system, the clinical symptoms and methods used for their laboratory diagnosis.
- New and emerging infections and tropical diseases, clinical characteristics and treatment.
- Factors contribute to disease progression caused by infections and antimicrobial treatment. Development of theoretical and practical skills in the design and execution of clinical and laboratory protocols.
- Epidemiology of infections and the current 'tools' used to deal with an epidemic.
- How to use general texts, reference books and a range of other resources to further develop knowledge through continuous independent learning.
- How to develop a research paper either individually or in a group (searching the relevant literature, evaluating the data and writing).
- How to use general texts, reference books and a range of other resources to further develop knowledge through continuous independent learning.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Teamwork
- Working in an interdisciplinary environment

- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

(3) **SYLLABUS**

Lectures:

1. **Introduction:** Historical overview/ Laboratory Microbiology in practice. Definitions: Infection, Species of infectious agents, epidemic/epidemic strain. Abnormalities of laboratory parameters in infections.
2. **Diagnosis of bacterial infections-Epidemiological correlation**: Gold standard culture microbiological methods, Molecular techniques. The role of Reference Centers in epidemiological investigation (ECDC, KEELPNO). European networks, European and International Organizations. European and International Surveillance Systems for Waterborne (EWGLI) and Foodborne Infections (TESSy).
3. **Clinical laboratory investigation protocols**: Development of protocols to deal with epidemics caused by infectious agents (tuberculosis, malaria, cholera).
4. **Nosocomial infections**: Which infection is considered nosocomial/Endogenous-Exogenous. Definitions: Colonization, Contamination, Contamination, Recontamination. The main ones: bacteremias, urinary tract infections, surgical wound infections, respiratory infections, bacteremia. Causative factors. Transmission, Clinical picture and laboratory diagnosis.
5. **Infections of the reproductive system/urinary system**: Sexually Transmitted Diseases (STDs), Colpitis, Infections of the male genital system. Cystitis, Pyelonephritis, common urinary tract infections, recurrent urinary tract infections. Description - Causative factors. Clinical picture and laboratory diagnosis.
6. **Respiratory System Infections**: Upper and Lower Respiratory, Community Pneumonia, Gram (+) Cocci Pneumonia, Atypical Pneumonia, Legionnaires' Disease. Description - Causative factors. Clinical picture and laboratory diagnosis.
7. **Gastrointestinal System Infections**: Diarrheal Syndrome, Nosocomial Gastroenteritis, Hemolytic Uremic Syndrome/Foodborne Infections. Description - Causative factors. Clinical picture and laboratory diagnosis.
8. **Oral cavity infections**: Viral-Herpetic (HSV, VZ, EBV), HIV, Fungal (candidiasis, histoplasmosis). Description - Causative factors. Clinical picture and laboratory diagnosis.
9. **Skin-Mucous/Eye Infections**: Viral Infections, Fungal Infections, Staphylococcal/Streptococcal Infections. Description - Causative factors. Clinical picture and laboratory diagnosis.
10. **Neuro-infections**: Meningitis, Encephalitis, Tetanus, Diphtheria, Neurotropic Viruses, Spongiform Encephalopathy. Description - Causative factors. Clinical picture and laboratory diagnosis.
11. **Infections in immunosuppressed persons**: Infections during chemotherapy, Infections in HIV patients, children-elderly-people with chronic diseases. Description - Causative factors. Clinical picture and laboratory diagnosis.
12. **Emerging Infections/Tropical Diseases**: Emerging Respiratory Viruses, Emerging Blood Transmitted Pathogens, Malaria, Tuberculosis. Diseases caused by protozoa, helminths, viruses. The mode of their transmission, the clinical manifestations, their geographical distribution, the preventive measures. Description - Causative factors. Clinical picture and laboratory diagnosis.
13. **Infections caused by anaerobic microbes**: Infective endocarditis, infections of prostheses, dissolution of the continuity of the skin and mucous membrane of the oral

cavity. Description - Causative factors. Clinical picture and laboratory diagnosis.

(4) **TEACHING and LEARNING METHODS - EVALUATION**

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively. • Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	39
	Laboratory/Tutorial Exercises	0
	Interactive Teaching	12
	Project elaboration	13
	Essay writing	13
	Educational visits	0
	Independent Study & Bibliography Analysis	13
	Course total	**90**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	1. Written final exam (60%) that includes: • Multiple choice questions • Short Answer Questions • Open response questions • Critical thinking questions, theory understanding questions and evaluation of way of thinking questions • Problem Solving Students, when given the questions, are informed about how to evaluate each group of topics, depending on their degree of difficulty. The evaluation takes into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency. 2. Paper Presentation (40%) The theory is examined in the final exam, while in case of individual or teamwork, the grade of the latter participates up to 40% in the formation of the grade of the course

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. **In Greek**

1 Murray P., Rosental K., Pfaller M. Ιατρική Μικροβιολογία (Ελληνική έκδοση). Εκδόσεις Παρισιάνου, 6η έκδοση, 2012

2 Χαρβάλου Αικ. Πρωτόκολλα κλινικής Μικροβιολογίας – Σύνοψη εργαστηριακής προσπέλασης βακτηριακών λοιμώξεων. Εκδόσεις Πασχαλίδη, 2007

3 Greenwood D., Slack R., Peutherer J., Barer M. ΙΑΤΡΙΚΗ ΜΙΚΡΟΒΙΟΛΟΓΙΑ Μικροβιακές Λοιμώξεις, Παθογένεια, Ανοσία, Εργαστηριακή Διάγνωση και Θεραπεία, Εκδόσεις Πασχαλίδης, 2011

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7031 - 7032	**SEMESTER**	7th
COURSE TITLE	ASSISTED REPRODUCTIVE METHODOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Theoretical lessons	2	4
Laboratory lessons	2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Eclass.uniwa.gr, Moodle.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The students at the end of the lesson will be familiar with the:

- male and female reproduction system (anatomy and physiology),
- Male and female pathological conditions that force couples to assisted reproduction,
- the legal framework of assisted reproduction in Greece and abroad,
- ethical issues raised by assisted reproduction in Greece and worldwide,
- standard assisted reproduction (IVF) technique and women hormonal stimulation,
- insemination technique,
- Preimplantation Genetic Diagnosis,
- cryopreservation of human gametes and embryos,
- general sperm analysis,
- extinguished sperm tests.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information with the use of the necessary technology

Working independently

Working in an interdisciplinary environment

Team work

3. SYLLABUS

Theoretical lessons:

1. The male reproductive system. Common diseases and reproductive problems. Male sexuality, pathological conditions and their treatment, male contraception.

2. The female reproductive system. Common diseases and reproductive problems. Female sexuality, pathological conditions and their treatment, female contraception.

3. The human gametes. Clinical and laboratory tests for their quality control.

4. The physiology of reproductive hormones. The woman's cycle and its disorders. The infertile man, diagnosis and clinical treatment (TESA, MESA, retrograde ejaculation).

5. The physiology of conception, pathological conditions and their clinical treatment. The physical and technical abortion of the fetus. Causes of recurrent miscarriages.

6. Prenatal screening in women and men. The stages of a normal pregnancy, the development of the fetus. The birth.

7. The preparation of the woman for in vitro fertilization, the ''natural cycle'', the hormonal stimulation of the ovaries. Counseling in assisted reproduction.

8. Sperm preparation techniques, artificial insemination.

9. The main stages of in vitro fertilization (IVF) (ovulation, sperm collection, technical fertilization, embryo selection, embryo transfer).

10. The basic laboratory techniques of in vitro fertilization. Laboratory equipment, materials and methods.

11. The preimplantation genetic diagnosis. The embryo transfer at the blastocyst stage and its advantages.

12. The cryopreservation of human gametes and embryos. Stem cell and umbilical cord blood banks.

13. The modern legal framework for assisted reproduction. Ethical dilemmas and the relevant public debate.

Laboratory lessons:

1. How to collect semen samples in a natural and surgical way. Determination of normal characteristics of the sperm. Automated sperm analyzers (CASA). The preparation of sperm smears in order to determine the vitality and morphology of spermatozoa.

2. Determination of sperm mobility according to WHO standards, the proper Internal quality control in order to check the repeatability of mobility's measurements.
3. The assessment of the concentration and number of spermatozoa with the Neubauer hemocytometer according to WHO standards, the proper Internal quality control to check the repeatability of sperm concentration measurements.
4. The microscopy distinction of sperm aggregations and accumulations, the determination of IgG, IgA antisperm antibodies in semen samples, the preparation of Papanikolaou staining in laboratory.
5. The preparation of eosin - nigrosin staining in the laboratory, the assessment of sperm vitality.
6. The determination of the sperm morphology according to the WHO standards in stained semen smears by Papanikolaou staining, the proper internal quality control to check the repeatability of morphology measurements.
7. The determination of sperm morphology with Spermac Stain and pre-painted slides.
8. The assessment of round cells in sperm with the Neubauer hemocytometer, stained sperm samples by Papanikolaou staining and Vital Screen.
9. The technique of sperm purifying in order to be used in artificial insemination.
10. The osmotic test for the assessment of sperm vitality.
11. The assessment of defragmentation index (halo test).
12. Biochemical analysis in semen samples (determination of citric acid).
13. Biochemical analysis in semen samples (determination of fructose).
14. Practical assessment, written exams.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face teaching, Laboratory education</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching, laboratory education
Communication with students, Teaching through video.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures with audiovisual media</td><td>40</td></tr>
<tr><td>Laboratory practice</td><td>20</td></tr>
<tr><td>Study of literature</td><td>36</td></tr>
<tr><td>Student’s study hours</td><td>20</td></tr>
<tr><td>Course total</td><td>116</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Theory:
Multiple choice questionnaires
Short-answer questions
Laboratory:
Laboratory work
Short-answer questions
Problem solving</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Overton C, Serhal P, Ορθή κλινική πράξη στην υποβοηθούμενη αναπαραγωγή, Parisianos editions.
Ann Fullick, Assisted reproduction, Savvalas Editions,
Heffner L, Human Reproduction at a glance, Parisianos editions.
Evgeni E, Lymperopoulos G, Function of male sperm, 978-960-452-100-5. Αθήνα 2010. Bita Medical Editions 2010.
WHO laboratory manual on examination and processing of human semen analysis, Sixth edition, 2021.
Rajasingham S. Jeyendran, Protocols for Semen Analysis in Human in Clinical Diagnosis, Taylor & Francis, London 2002.
Comhaire F, Hargreave T, WHO Manual for the Standardized Investigation, Diagnosis and Management of the Infertile Male, Cambridge University Press, 2000.

- Related academic journals:

Human Reproduction
Andrology
Human Reproduction Update
Fertility and Sterility

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**			
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**			
LEVEL OF STUDIES	**Undergraduate studies**			
COURSE CODE	**7041-7042**	**SEMESTER**	**7th**	
COURSE TITLE	**Mycology**			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures			2	4
Laboratory exercises			2	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special Background Course			
PREREQUISITE COURSES:	_			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Objectives and expected learning outcomes:

Upon completion of the course, students will be able to:

- Demonstrate understanding of the physiology and morphology of fungi.
- Demonstrate acquired practical skills in the isolation, cultivation and identification of fungal microorganisms.

The aim of the Mycology course is to provide theoretical knowledge and practical skills in the isolation, culture and identification of fungi.

Students will be enabled to:

1. Understand the meaning of fungi, their structures, genetics and their capacity to cause diseases. Differentiate the fungi from other microorganisms.
2. Demonstrate understanding of the reproduction cycle of fungi, their mode of transmission and types of fungal infections.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Adapting to new situations Decision-making	Showing social, professional and ethical responsibility and sensitivity to gender issues
Working independently Team work	Criticism and self-criticism
Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Production of free, creative and inductive thinking …… Others…

- Research, analyze and synthesize data and information by using the necessary technologies
- Autonomous individual work
- Teamwork
- Work in an interdisciplinary environment
- Production of new research ideas
- Respect for the natural environment
- Promoting free, creative and inductive thinking

3. SYLLABUS

Lectures:

1. Introduction to Mycology.
2. Biology of fungi (morphology, structure, nutrition, metabolism-development).
3. Taxonomy - Reproduction
4. Human fungal diseases and Mycotoxins
5. Superficial mycoses.
6. Skin fungal infections
7. Dermatophytes
8. Subcutaneous fungal infections
9. Systemic or deep mycoses
10. Endemic dimorphic fungi & diseases
11. Zygomycoses.
12. Opportunistic fungal infections, Onychomycosis
13. Antifungal drugs. Prevention and Treatment. Clinical cases.

Laboratory exercises:

The laboratory activities are performed in the mycology lab equipped with the necessary devices, reagents and consumables (staining, cultivating materials) and tools for microscopic observation of fungi. Lab activities include:

1. Laboratory-Safety rules and regulations in the Mycology lab, cultivating methods and nutrient media for fungal cultures. Isolation and inoculation techniques.
2. Inoculation of samples (from food and environmental fungi). Hair baiting test using soil as a source of dermatophytes.
3. Scraping samples from skin, nails and hair.
4. Preparation of wet mounts, processing of nail and hair samples, potassium hydroxide (KOH) preparations. Staining of fungi samples using lactophenol and methylene blue.
5. Dry preparation-Staining procedures with methylene blue (acetic acid).
6. Culture of samples from superficial skin and subcutaneous fungal infections. Use of Riddell slide culture test.
7. Filamentous fungi (Aspergillus-Penicillium), macroscopic and microscopic observation of colonies. Plate culture interpretation, Identification of Aspergillus and Penicilli according to the microscopic images. Visualization of the Riddell slide test using the compound light microscope.
8. Dermatophytes-laboratory diagnosis: Observation and processing of the Hair baiting test that was started in the 2nd lab activity. Transfer and inoculation of hair baiting test samples in fresh Dermatophyte Test Medium (DTM). Presentation and discussion of clinical cases.
9. Dermatophytes: Evaluation of Dermatophyte test medium (DTM) cultures. Identification of dermatophytes based on the macroscopic interpretation of colonies and on the observation of spores (conidia) morphology under the microscope.
10. Blastomyces: Identification of Blastomycosis, visualization of chlamydospores. Discussion on clinical cases.
11. Identification of Candida spp., culture of Candida spp. in CROMAgar medium. Use of Germ tube test for the differentiation of *Candida albicans from other Candida species.*
12. Basidiomycetes: Identification of *Cryptococcus neoformance*. Morphologic characteristics and capsule visualization using India ink suspensions of the cells.
13. Serological and molecular tests in diagnostic Mycology.
    Susceptibility to antifungal drugs-MIC, E-test. Prevention and Treatment

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively. • Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures	60
Laboratory exercises	56
Interactive Teaching	0
Bibliography study and analysis	1
Study preparation	0
Written assignment	0
Educational visits/excursions	0
Independent study	1
Course total	116

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory-lectures:** Evaluation in Greek language In class 2 hours written final examination (100%), based on: • Essay questions • Multiple choice questions • Short answer questions • matching **Laboratory:** • Written/oral final examination (multiple choice, problem solving, short answers) • Written reports (optional) .

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek:

1. Murray P, Rosenthal K, Pfealler M. Medical Microbiology (Translated in Greek edn). PARISIANOU PUBLICATIONS, Athens2015.
2. Greenwood D, Slack R, Peutherer J, Barer M. Medical Microbiology (Translated in Greek edn). PASCHALIDIS PUBLICATIONS, Athens, 2011

B. In English;

1. Leventhal R, Cheadle RF. Medical Mycology: A Self-Instructional Text. F.A Davis company 6th edition, 2012.

2. David T. John, William P Pentri. Markell and Voge's Medical Parasitology. Saunders Elsevier, 9th edition, 2006

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**7051-7052**	**COURSE SEMESTER**	**7th**
COURSE TITLE	**PATHOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**6**
Laboratory	**2**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Special background **(SB)**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE145/

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate

level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

The **aim** of the course is to enable the students to:

1) recognize and understand the histopathological lesions of various morbid conditions
2) know the mechanisms that cause various morbid conditions and, particularly, with regards to neoplasms, to evaluate the results for human health and to prevent any fatal development of various ones and
3) assist students in understanding the microscopic picture of various morbid conditions and especially those of malignant neoplasms.

The **scope** of this course is to acquire the knowledge of histopathological lesions of various morbid conditions which are created by the influence of various factors such as microbial, physical, chemical, etc.

Additionally to these morbid conditions are included and the neoplasms, as much the benign as the malignant ones, whereas is made a special reference to the most common types and foci of cancer.

The student after the end of the course will be:

- aware of histopathological lesions of various morbid conditions
- aware of the histopathology of the benign and malignant tumors
- able to recognize the basic pathological lesions of cells and tissues under the light microscope.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Working in an international environment *Working in an interdisciplinary environment* *Production of new research ideas*	*Production of free, creative and inductive thinking* *……* *Others…* *…….*

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking
- Production of new research ideas

3. SYLLABUS

Theory

1. Generally about the cell, cell division-The basic tissues, epithelial, types and function of epithelium, connective tissue, connective tissue types, hematopoietic tissue cartilaginous, osseous tissue, functions of the connective tissue, muscular tissue, types of muscular tissue and function, nervous tissue, cellular components of the Central Nervous System, nerves. Basic knowledge.
2. Causes of the diseases, inflammation, types of inflammation, histopathology of inflammation, incidences and importance of inflammation.
3. Pathological lesions of the cells and tissues, regressive lesions, disorders of proliferation (multiplication), atrophy, types of atrophy, necrosis and cell death, types of necrosis, degeneration, types of degeneration.
4. Deposition of inorganic or organic substances, asbestosis, carbonization, silicosis, urolithiasis and cholelithiasis, pigments depositions, hemosiderosis and hemochromatosis, jaundice, types of jaundice.
5. Restoration of histopathological lesions, regeneration, hyperplasia, hypertrophy, metaplasia, transplantation.
6. Characteristics of neoplasms, incidences of malignant neoplasias. Precancerous lesions, carcinogenesis. Classification, cancer staging (STAGE), morphological characters of malignancy (GRADE). Prognosis, survival. Primary and secondary prevention, high-risk groups.
7. The main malignant neoplasms of respiratory tract (cancer of nasopharynx, larynx, lung).
8. The main digestive malignant neoplasms (cancer of esophagus, stomach, pancreas, liver, large intestine).
9. The main malignant neoplasms of the urinary system (kidney cancer, urinary bladder cancer) and of the male genital tract (seminoma, prostate cancer).
10. The main malignant neoplasms of the female genital tract (cervical cancer – endometrial, ovarian, including breast cancer).
11. Malignant neoplasms of the lymphoid tissue (Hodgkin's and non-Hodgkin's Lymphomas).
12. Malignant neoplasms of endocrine glands (thyroid cancer), and skin (basal cell

carcinoma-squamous cell carcinoma-melanoma).

13. Malignant tumors of osseous tissue (giant cell tumor of bone, osteosarcoma). Management of malignant neoplasms and treatment.

Laboratory

The **laboratory exercises** take place in Histology-Histopathology Lab equipped with the necessary educational light microscopes and it is based on:

1. Demonstration in light microscope of the main histopathological lesions of inflammation, (acute, subacute and chronic inflammatory tissue's reaction), and the basic specific chronic inflammations.
2. Demonstration in light microscope of the main histopathological lesions of the cells and tissues (necrosis, degeneration, atrophy).
3. Demonstration in light microscope of the deposition of inorganic or organic substances in the tissues, such as calcifications, cholelithiasis, hemosiderosis, hemochromatosis, histopathological lesions of the tissue recovery (hyperplasia, hypertrophy).
4. Demonstration in light microscope of the basic benign tumors (fibroadenoma, nevus, leiomyoma, cystadenoma, polyp, papilloma, adenoma, lipoma, neurinoma (Scwannoma), fibroma, hemangioma, etc.).
5. Demonstration in light microscope of major malignant neoplasms (cancer and sarcoma), as well as the metastatic pathway in surrounding tissues, lymph nodes and vessels.
6. Demonstration in light microscope of malignant tumors of the respiratory system.
7. Demonstration in f light microscope of malignant tumors of the digestive system.
8. Demonstration in light microscope of malignant tumors of the urinary system.
9. Demonstration in light microscope of malignant tumors of the male genital system.
10. Demonstration in light microscope of malignant tumors of the female genital system and breast.
11. Demonstration in light microscope of malignant tumors of lymphoid tissue.
12. Demonstration in light microscope of benign and malignant tumors of the main endocrine glands-thyroid gland.
13. Demonstration in light microscope of malignant tumors of the skin and osseous tissue.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall and in the Histology-Histopathology lab.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation and • Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly • Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histopathology images of light (L/M) and electron microscopes (E/M), questionnaires, informations for the attendance

	of congresses related to the teaching module of the academic course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	<table><tr><th>***Activity***</th><th>***Semester workload***</th></tr><tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments.</td><td>90</td></tr><tr><td>Laboratory Exercise, Field Exercise, in small groups of 20-25 students.</td><td>56</td></tr><tr><td>Course total</td><td>***146***</td></tr></table>
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and*	**Theory** Writing Final Examination (100%) which includes: • multiple choice questionnaires • short-answer questions **Laboratory** **7.** Oral/ Writing final Examination with short-answer questions **8.** Essay/report for the laboratory part (optional)

where they are accessible to students.	

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Kemp L. Walter, Denis K. Burns and Travis G. Brown. Pathology Pictures 1st Greek. Edition, Medical Editions, P.Ch. Paschalides, S.A., 2010
2. Anthouli-Anagnostopoulou Fr. Histopathology with elements of Oncology. Basic Knowledge. 1st edition, Medical Editions, P.Ch. Paschalides, Athens, 2009
3. Herrington C. Simon. Muir's Pathology. 1st edition, Broken Hill Publishers Ltd, Cyprus, 2019
4. Nakopoulou Lydia Patsouris Efstratios, Atlas of Pathology, Medical Editions, P.Ch. Paschalides, 2005
5. Underwood J. C. E. General and Systematic Pathology. Editor: Parisianou S.A. , 2007
6. Böcker-Denk-Heitz. Pathologie. Gen. Text Editing Patsouris E., Volumes I, II, III, 3rd edition, Medical Editions, P.Ch. Paschalides, 2004.
7. Böcker-Denk-Heitz. Pathology.1st edition, Volume I, Broken Hill Publishers Ltd, Cyprus, 2011
8. Böcker-Denk-Heitz. Pathology.1st edition, Volume II, Broken Hill Publishers Ltd, Cyprus, 2011
9. Kumar V., A. Abbas, J. Aster. Robbins. Basic Pathology, 9th edition (Greek), Medical Editions Parisianou S.A., 2015
10. Kumar V., A. Abbas, J. Aster. Robbins. Basic Pathology, 5th edition, Parisianou S.A., 2019
11. Kierszenbaun L. Abraham & Laura L. Tres. Histology and Cell Biology. An Introduction to Pathology. 3rd Greek edition. Broken Hill Publishers Ltd, Cyprus, 2013
12. Kemp L. Walter, Denis K. Burns and Travis G. Brown. The Big Picture Pathology. The Mc Grow-Hill Companies Inc., U.S.A., 2008
13. Rosai and Ackerman's Surgical Pathology Review, Damjanov I., Nola M., Mosby, Science Publications, 2006
14. Lever's Histopathology of the Skin, 9th edt,, Lippincott, Williams & Wilkins, 2005
15. S.E. Mills. Sternberg Diagnostic Histopathology, Two Set Volumes, Lippincott Williams Wilkins, 4th edition, 2004
16. Lakhani S.R., S.A. Dilly, C.J. Finlayson. Basic Pathology, 5th edition, Parisianou S.A., 2019

-Related academic journals:

1. Histology and Histopathology, ISSN 02133911, Spain
2. Histopathology, ISSN 13652559, 0309-0167, UK
3. Diagnostic Histopathology, ISSN 17562317, UK
4. International Journal of Clinical and Experimental Pathology, ISSN 19362625, USA
5. Advances in Anatomic Pathology, ISSN 1072-4109, USA
6. American Journal of Pathology, ISSN 0002-9440, USA
7. International Journal of Surgical Pathology, ISSN 1066-8969, USA

8. Journal of Pathology, ISSN 0022-3417, USA
9. Pathology & Oncology Research, ISSN 1219-4956, Netherlands
10. Annual Review of Pathology-Mechanisms of Disease, ISSN, 1553-4006, USA

COURSE OUTLINE

1. GENERAL

SCHOOL	**HEALTH & CARE SCIENCES**		
ACADEMIC UNIT	**MEDICAL LABORATORIES**		
LEVEL OF STUDIES	**UNDERGRADUATE**		
COURSE CODE	**7061-7062**	**SEMESTER**	**7th**
COURSE TITLE	**PARASITOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	CREDITS
Lectures	**3**	7
Laboratory exercises	**3**	
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized General Knowledge (SGK)
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC110/ **&** https://eclass.uniwa.gr/modules/document/?course=TIE102

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of course is to enable students to:

- Understand and describe in detail the life cycles of parasites, pathogenicity, epidemiology, diagnosis and treatment of parasitic diseases
- Know and embed the knowledge about the host-parasite relationship, biology, ways of controlling vectors, intermediates and final parasite hosts
- Know significant morphological characteristics for the identification of species and parasites' life stage
- Perform laboratory classic diagnostic methods in order to detect parasites in biological fluids, tissues and organs
- Acquire specialized skills in advanced diagnostic molecular and immunological methods
- Present and interpret the diagnostic results
- Project planning and management

The **scope** of the course is to introduce students to

- the basic principles of biology of parasites and parasitic diseases
- the classification and terminology of parasites
- the life cycle of parasites
- the transmission ways of parasites
- the geographical distribution and epidemiology
- the treatment and prevention of parasitic diseases and the clinical symptoms are described.
- the arthropod chapter (morphology, biology, ways to control).
- Emerging issues such as the rise in parasitic infections in Greece due to migration of populations, the emergence of new parasites, antigenic interference of parasites and resistance to antiparasitic drugs, the emergence of parasitic infections in immunosuppressive patients, the incidence of parasitic infections in immunosuppressive patients, the interaction of parasite-host disease and research to create vaccines so that the student has up-to-date information and an integrated knowledge
- An important purpose of the course is the proper execution of diagnostic methods for the detection and identification of parasites by conventional microscopic methods, improved serodiagnostic techniques and molecular detection methods for parasitic DNA / RNA.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

The student after the completion of the course will be able to:

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Working independently

Working in an interdisciplinary environment

Working in an international environment

Production of new research ideas

Production of free, creative and inductive thinking

3. SYLLABUS

Theory

1. Introduction to parasitology, terminology and parasites taxonomy groups. Subregnum Protozoa, **Subphylum Sarcodina Enteric Amoeba of Humas, Pathogenic Free Living Amoebae** (Morphology, Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment, Pathophysiology, Prevention)

2. Protozoa, **Subphylum Mastigophora of digestive and reproductive systems** ((*Giardia lamblia, Dientamoeba fragilis, Trichomonas hominis, Trichomonas vaginalis, Chilomastix mesnili*) (Morphology, Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment, Pathophysiology, Prevention)

3. Protozoa, **Blood and Tissue Protozoa. Hemoflagellates** (*Trypanosoma spp, Leishmania spp)* (Morphology, Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment, Pathophysiology, Prevention)

4. **Phylum Sporozoa (Apicomplexa) Subclass Coccidia . Genus Plasmodioum -Human Malaria Parasites** (*P. malariae, P. falciparum, P. ovale, P.vivax*). Morphology, Life cycle, Life cycle variations, Epidemiology, Symptomatology and Diagnosis, Chemotheraphy, Pathophysiology, Prevention, Immunity - Vaccines in preparation

5. **Blood and Tissue Protozoa: Other Apicomplexans Subclass Coccidia, *Babesia spp* (**Life cycle, Symptomatology and Diagnosis, Treatment**) *Toxoplasma gondii*** (Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment) ***Sarcocystis spp*** (Life cycle, Symptomatology and Diagnosis, Treatment)

6. ***Cryptosporidium parvum*** (Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment***), Cyclospora cayetanensis, Isospora belli spp*** (Life cycle, Symptomatology and Diagnosis, Treatment)

7. **Phylum Cilliophora (***Balantidium coli***)** Life cycle, Symptomatology and Diagnosis, Treatment

8. **Subregnum Metazoa, Phylum Nematoda.** General characteristics of Nematoda ***Intestinal Nematodes*** *(Ascaris lubricoides, Enrerobious vermicularis, Trichuris trichiura, Strongyloides stercoralis, Necator americanus and Angylostoma duodenale, Trichinella spiralis)* Structure of the adult, larva(e) eggs. (Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment)

9. **Blood and Tissue Nematodes Life cycle, Periodicity, PART I Filarial WormsI** *(Wuchereriabancrofti, Bragia malayi, Onchocerca volvulus, Loa loa Mansonella spp, Dracunculus medinensis) Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment)*

10. **Blood and Tissue Nematodes PART II** *Dirofillaria spp, Anisakis, Toxocara canis, Toxocara*

cati(Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment)

11. **Phylum *Platyhelminthes Class Cestoida. Morphology Physiology. Intestinal Tapeworms***
Taenia solium, Taenia saginata, Echinococcosis spp (Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment)

12. ***Class Tremadoda**. Schistosoma spp Opistorchis Felineous Clonorchis sinesnisFasciola hepatica, Fasciolopsis buski, Heterophyes heterophyes, Paragonimus westwermani (Life cycle, Epidemiology, Symptomatology and Diagnosis, Treatment)*

13. ***Phylum Arthropods. Significance of Arthropods as vectors. General Structural Features.***
Biting Dipterans. Non Biting Dipterans. Fleas, Lice,. The Acarines. (Ticks, Mite)

Laboratory courses

1. Definitions: Parasite, Intermediate and Final Host, Vector, Carrier, Parasitic diseases, Parasitological diagnosis. Lab Parasitology Safety and Equipment, Quality Control Procedures for the Diagnostic Parasitology Laboratory. Use of Microscopy

2. Laboratory diagnosis of intestinal parasites. Fresh specimen collection (Collection times, Type of specimen, Specimen Stability, Preservation of Specimens). Macroscopic and Microscopic Examination of Fecal Specimen. Examination for Pinworm (Cellulose Tape Preparations, Anal Swaps).

3. General Information on Fixation and Staining Procedure. Permanent stained Smears. Trichrome Staining Technique

4. Concentration Methods. Sedimentation Procedures. Flotation Procedures

5. Procedures for Detection Blood Parasites. Preparation of of Thick and Thin Blood Films. The use of fluorescence enhancement to improve the microscopic diagnosis of falciparum malaria. identification of microfilariae in a blood smear by microscopic examination.

6. Introduction to Immunology of Parasites. Detection of parasitic infections using ELISA .Case Study: Detection of *Anti-Toxoplasma gondii* Antibodies using Solid Phase ELISA

7. Detection by Immunofluorescence of Antibodies to Parasitic Agents. Case Study: Detection of Anti-*Leishmania infantum* Antibodies using IFAT

8. Western Blotting tests in the detection of IgG antibodies to parasites. Case Study: Detection of Anti-Echinococcus granulosus Antibodies using Western Blot analysis

9. Introduction to Molecular Parasitology. Molecular Testing for Parasite Detection and Disease Diagnosis. Parasitic DNA extraction (from cultured parasites). DNA electrophoresis

10. PCR for diagnosis of parasitic infections. Case study: PCR detection and identification of *Leishmania infantum.*

11. PCR Products Gel Electrophoresis. How to Interpret DNA Gel Electrophoresis Results

12. Real-time PCR assay for quantification of parasite burden. Case Study: Real-Time PCR for Quantitative Detection of *Toxoplasma gondii*

13. Parasite Recovery, Culture Methods, Animal Inoculation. Case study: Balb/c inoculation with *Toxoplasma gondii.*

Laboratory exercises are carried out in the lab Parasitology equipped with the necessary equipment-reagents-staining and training microscopes. Real Time PCR is carried out in collaboration with the Molecular Parasitology Laboratory of the Hellenic Pasteur Institute.

The teaching of laboratory courses is supported by

i. Animations that present the principles of methods and have been created by the master of the lesson in particular for the Lab Parasitology, as well as
ii. Videos presentation of the immunological and molecular methods created by the Diagnostic Department of the Hellenic Pasteur Institute.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face Laboratory of Microbiology and Immunology	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of I.C.T. in Teaching for the slideshow screen and course presentation and use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly. Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), questionnaires, information related to the teaching lesson of the academic course, etc.	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	40
	Laboratory Practice	40
	Interactive Teaching	10
	Study and Analysis of Bibliography	20
	Essay Writing	15
	Educational Visits	10
	Project	10
	Non- Directed Study	29
	Course total	**174**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Theory** Writing Final Examination (60%) which includes: -Multiple choice questionnaires - Short answer questions -Open- ended questions -Problem solving -Public presentation (40%) **Laboratory** Evaluation of practice skills oral examination Written reports (optional)

5. ATTACHED BIBLIOGRAPHY

-

Suggested English bibliography:

1. Laura Nabarro & Stephen Morris-Jones & David Moore. Peters' Atlas of Tropical Medicine and Parasitology, 7th Edition, Elsievier, 2018
1. Nick Beeching, Geoff Gill. Lecture Notes: Tropical Medicine, 7th Edition, Wiley- Blackwel 2014
2. Andrea L. Graham .Evolutionary Parasitology: The Integrated Study of Infections, Immunology, Ecology, and Genetics *The Quarterly Review of Biology 2012* Vol. 87,(1) p. 76-81
3. Murray P, Rosenthal K, Pfealler M. Medical Microbiology. 7th edition Elsevier 2012
4. Lynne S. Garcia. Diagnostic Medical Parasitology 5th Edition Elsevier2012
5. Mark Gladwin, William Trattler, C. Scott Mahan. Clinical Microbiology Made Ridiculously Simple. 6th edition. Medmaster 2014.
6. Michael Eddleston, Robert Davidson, Robert Wilkinson and Stephen Pierini. Oxford Handbook of Tropical Medicine, Second Edition Oxford University Press, Oxford, UK, 2004. ISBN 0-19-852509-

Suggested Greek bibliography:

1.
2. Michael T. Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl BROCK BROCK BIOLOGY OF MICROORGANISMS. ITE-Crete University Press, 2018
3. Murray P, Rosenthal K, Pfealler M. Medical Microbiology (translated in Greek edn). Parisianou Publications, Athens, 2012.
4. Greenwood D, Slack R, Peutherer J, Barer M. Medical Microbiology (translated in Greek edn). Paschalidis Publications , Athens , 2012.
5. Poggas Nikolaos, Charvalos Aikaterini. Medical Microbiology. Odysseas Publications, Athens, 2011.
6. Gilligan Peter H., Smiley Lynn M., Shapiro Daniel S. Cases in Human Parasitology. Paschalidis Publications, Athens 2008
7. Vakalis Nikolaos. Medical Parasitology. Zita Publications, Athens 2003-2004
8. Charalampidis Stylianos .Human and Animal Parasitic diseases University Studio Press Publications.Thessaloniki 2003

9.6.5 8th Semester

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**8011**	**SEMESTER**	**8th**
COURSE TITLE	**Biotechnology**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	special background/ elective course		
PREREQUISITE COURSES:	–		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	–		
COURSE WEBSITE (URL)	E class.uniwa.gr		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area

Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes

Upon the end of the course, students will have obtained knowledge on:

• the basic principles of genetic modification of cells or whole organisms for production of food and medicine products

• the importance of using stem cells in new therapies

• the principles of gene therapy

• the latest biotechnological techniques (such as Nanobiotechnology) which are applicable to diagnosis or treatment

The aim of the course is for students to understand the principles of modern Biotechnology through the analysis of genetic engineering technologies which have application in medicine, pharmacology, gene therapy and food production. During this course, the use of stem cells which creates new research and therapeutic perspectives, is also studied. Finally, the principles of the rapidly developing biomedical industry of nanotechnology and the resulting bioethical issues from these new technologies will be examined in the frame of the Biotechnology course.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management Respect for difference and multiculturalism Respect for the natural environment
Adapting to new situations Decision-making	Showing social, professional and ethical responsibility and sensitivity to gender issues
Working independently Team work	Criticism and self-criticism Production of free, creative and inductive thinking
Working in an international environment Working in an interdisciplinary environment Production of new research ideas	…… Others…

- Research, analyze and synthesize data and information by using the necessary technologies
- Autonomous work
- Teamwork
- Work in an interdisciplinary environment
- Production of new research ideas
- Respect for the natural environment

3. SYLLABUS

1. Introduction to Medical Biotechnology
2. Principles of recombinant DNA technology
3. Modern techniques of genetic engineering
4. Biotechnological production of hormones (human insulin, human growth hormone)
5. Biotechnological pharmaceutical products
6. Pharmacogenomics
7. Microbial biotechnology - use of microorganisms in Biotechnology
8. Introduction to Agricultural and Livestock Biotechnology
9. Production of drugs from transgenic animals
10. Gene therapy in humans
11. Stem cells
12. Nanotechnology (nanosensors, nanoparticles for gene transfer)
13. Ethical issues of Biotechnology

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face lectures</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of audiovisual media in the face-to-face lectures
• Use of the e-class page of the course for posting useful material (power point presentations, scientific articles, instructions, useful links)</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>108</td></tr>
<tr><td>Written assignments</td><td>36</td></tr>
<tr><td>Independent study</td><td>36</td></tr>
<tr><td></td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>7) Final examination (written) in Greek using:
• Multiple choice questionnaires and/or
• Short-Answer Questions and/or
• Open-ended questions

8) Presentation of essays</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek language:

1. J. D. Watson et al. Recombinant DNA. Academic Publications J. Basdra & Co. 2007
2. D.J.A. Crommeli et al. Pharmaceutical Biotechnology. Parisianou S.A, 2011

B. In English language;

1. Lauries P. and Wells S. Microbiology and Biotechnology. Cambridge Modular Sciences, 1998
2. Ellyn Daugherty. Biotechnology. Science of the New Millenium, 2012
3. Herren Ray. Introduction to Biotechnology 2. Delmar Cengage Learning, 2009

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	Medical Laboratories		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	**8021**	**SEMESTER**	8th
COURSE TITLE	**AGING AND LONGEVITY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	6

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SBC/CE SPECIAL BACKGROUND COURSE / COMPULSORY ELECTIVE
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.teiath.gr/courses/TIE124

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

The course offers knowledge and skills related to the biological basis of aging and longevity and the protection of the elderly. During the course we examine the parameters and the conditions that will allow for a personal and family environment safeguarding active and healthy aging.

The scope of the course is for the students to understand the biological mechanisms and the parameters of aging, to recognize the normal aging process, quality life and longevity, to know about geriatric syndromes, their symptoms, management and treatment.

The aim of the course is to make students able to understand the abilities and their contribution towards a healthy environment and way of living, in the protection of the elderly with emphasis in self-care practices, in maintaining independence, in voluntary actions, in embracing activities and attitudes supporting physical and psychological health, in improving family environment, in providing information and connectivity with official or unofficial supportive services.

After the end of the course students will be able to:

- understand the risk factors, the biological and psycho social parameters involved in aging and longevity

- know about specific to the elderly health problems
- evaluate issues relating to the health and care of the elderly plan and implement actions in order to protect the elderly
- use evaluation methods and tools for the assessment of their needs
- work in team or independently in the health and care services in order to serve the elderly
- advise and educate on health issues aiming to healthy and active aging.
- provide health care services in the entire spectrum related to the elderly in the community and its health structures.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Decision making
- Working independently
- Working in an interdisciplinary environment
- Producing new research ideas
- Project planning and management
- Respect for difference and multiculturalism

3. SYLLABUS

1. Morphological, neurochemical and clinical findings of aging
2. Definition and the meaning of aging and longevity. Theories of aging. Telomeres
3. Aging of the population and impact. Demography – Epidemiology
4. Healthy and active aging. Volunteerism. The importance of retirement
5. Zones of longevity. Lifestyle.
6. Risk factors. Physical activity. Falls. Vaccinations
7. Dietary issues in the elderly. Malnutrition. Sarcopenia.
8. Medical History of Elderly Patients. The Basics of Geriatric Pharmacology
9. Geriatric syndromes. Frailty syndrome. Somatopause. Debilitation
10. Sexuality and the elderly. Incontinence.
11. Dementia. Psychosocial problems
12. Stress and psychological health. Anxiety and Depression in the elderly.
13. Services – Organizations – Institutions. Health care facilities for the elderly.

4. TEACHING and LEARNING METHODS – EVALUATION

DELIVERY	Face to face in the classroom

<table>
<tr><td>Face-to-face, Distance learning, etc</td><td></td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT for teaching. Use of email and department site for communication with students

E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures-Presentations using audiovisual media.</td><td>80</td></tr>
<tr><td>Research paper writing</td><td>60</td></tr>
<tr><td>Self -Study</td><td>40</td></tr>
<tr><td>Course total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final examination

Essay questions
Multiple choice questions
Short answer questions</td></tr>
</table>

5. RECOMMENDED BIBLIOGRAPHY

1. Χανιώτης Φ., Χανιώτης Δ. ***Γηριατρική***. Ιατρικές Εκδόσεις Λίτσας, 2013.(Εύδοξος: 22769283)
2. Beers Mark H.,Jones Thomas V. Merck ***Εγχειρίδιο η υγεία στην 3η ηλικία***. Εκδόσεις Broken Hill Publishers LTD, 2007.3. Markides SK. Health and Aging. SAGE Publ. USA, 2007
3. Chernoff R. ***Geriatric Nutrition***. Jones & Bartlet Publ.USA, 2006
4. Kagawa Y. ***From clock genes to telomeres in the regulation of the healthspan***. Nutrition Reviews; 2012, 70(8):459-471
5. Haber D. ***Health promotion and aging. Practical applications for health professionals***. Springer Publishing Company. New York, 2010.
6. Naaldenberg J. ***Healthy aging in complex environments. Exploring the benefits of systems thinking for health promotion practice***. Wageningen University, The Netherlands, 2011

COURSE OUTLINE

1. GENERAL

SCHOOL	**of HEALTH and CARE SCIENCES**		
ACADEMIC UNIT	**BIOMEDICAL SCIENCES**		
DIVISION	**MEDICAL LABORATORIES**		
LEVEL OF STUDIES	**UNDERGRADUATE**		
COURSE CODE	**8031**	**SEMESTER**	**8**th
COURSE TITLE	**INTRODUCTION TO LABORATORY ANIMAL SCIENCE**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	**Specialization Course**
PREREQUISITE COURSES:	_
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	_
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC136/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

● The knowledge field of laboratory animals, understanding their correct use in order to derive reliable scientific *in vivo* experimental conclusions and at the same time ensuring the welfare of laboratory animals in line with European and Greek legislation.

●The ethical issues arising from human-animal interaction, used for scientific purposes, are also analyzed.

● The 3R principle (replacement, reduction and refinement of living conditions) as well as alternative experimental models are presented.

●The biology (anatomy, physiology, nutrition, reproduction) of the most commonly used species as well as genetic typing and trans genesis of laboratory animals.

●The housing and breeding conditions of laboratory animals, with particular emphasis on the environmental enrichment, the normal behavior of rodents and leporidae and the recognition of abnormal behavior, such as intolerance, pain, hardship and stress are also described.

●All handling methods, anesthesia, analgesia, pain relief, injections, sampling and euthanasia regarding lab animals are reported and described.

●The main infectious and parasitic diseases of laboratory animals as well as safety and hygiene rules for laboratory facilities are being taught.

Students will complete the education participating in the practical part of the course (two Workshops in lab animals environment (Clinical, Experimental & Translation Research Center of the Institute for Medical Research, Academy of Athens) where learning activities involving handling, containment, dosing and biological fluids administration, euthanasia, blood and other biological fluids sampling, euthanasia and anatomical retrieval of tissue and organs of the rodent and rabbits' body are carried out.

The scope of this course is the knowledge acquirement about the different aspects of maintenance (housing, storage, nutrition), welfare and handling of laboratory animals, genetic and microbial control, anesthesia and analgesia, experimental techniques, etc.

After successful completion of this course the student will be able to:

●Demonstrate responsibility for the implementation, control and management of the housing and handling conditions of laboratory animals, understanding their contribution to the reliability and repeatability of in vivo experimental results and to the welfare of

laboratory animals.

●Implement the safety rules for safe work and experimentation in animal housing facilities, in biomedical laboratories and pharmaceutical industries

●Be aware of any problems in the facility installations and welfare of the lab animals population

● Apply the appropriate practices for immediate resolution and restoration of the proper functioning of the facility

●Collaborate with researchers, scientific and technical staff in the design and implementation of in vivo experimental protocols.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Search for analysis and synthesis of data and information, with the use of the necessary technology
- Adapting to new situations
- Decision-making
- Respect for the natural environment
- Respect for difference
- Working in an interdisciplinary environment
- Production of new research ideas

3. SYLLABUS

1. An overview of the historical evolution of the use of laboratory animals. European and Greek Legislative Framework, Presidential Decree No 56 / 2013.

2. Alternative forms of experimentation. The principle of 3Rs

3. Breeding and accommodation of laboratory animals (housing- building materials- environmental control). Sterilization of premises and equipment. Rules on the safety of the laboratory

4. Study of laboratory animals behavior. Environmental enrichment.

5. Methods of laboratory animals handling. Cage care. Administration of medicinal products. Identification- labeling, conditions for transport and handling of laboratory animals both inside and outside the breeding country.

6. Introduction into the genetic laboratory of laboratory animals (a) transgenic animals (b) axenic animals

7. Recognition and management of pain. Administration of analgesic and anesthetic active substances. Euthanasia.

9. Anatomy, physiology and husbandry of the most commonly used laboratory rodents. Scientific fields of use.

10. Anatomy, physiology and husbandry of the most commonly used leporidae and carnivores. Scientific fields of use.

11. Anatomy, physiology and husbandry of the most commonly used primates. Scientific fields of use.

12. Anatomy physiology and husbandry of the most commonly used birds, amphibians and fish. Scientific fields of use.

13. Infectious diseases and parasitic diseases of laboratory animals.

14. Design and official authorization of in vivo experiments.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face in lecture hall.</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of I.C.T. in Teaching for the slideshow screen and course presentation and
• Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly
• Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links),</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>80</td></tr>
<tr><td>Essay writing</td><td>24</td></tr>
<tr><td>Educational visits</td><td>24</td></tr>
<tr><td>Non- directed study</td><td>52</td></tr>
<tr><td>Course total</td><td>180</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Final written examination (65%)
• Final written examination
• Short Answer Questions
Participation in Lab Workshop 25%
Design and official authorization of in vivo experiments 10%</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

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GREEK

1. Tselepidis Stavros. Introduction to laboratory animals. Kyriakidis Bros Publications S.A. 2012 ISBN: 978-960-467-375-9
2. Ipsilantis P.K. Principles of laboratory animal management. Rotonda Publications 2010 ISBN:978-960-6894-20-6
3. Soumplis P. and Voyiatzaki C. Study Manual for Laboratory Animals. NewTech-Pub Publications, 2008 ISBN: 978-960-6759-04-8
4. L.F.M. van Zutphen, V. Baumans, A.C. Beyners. Principles of experimental Animal Science 2002. Christina and Vasiliki Kordali Publications ISBN: 978-960-357-048

ENGLISH

1. Beaucham T, DeGrazia D (2019). Principles of animal research ethics. Oxford University Press ISBN: 9780190939120
2. Jerald Silverman (2016). Managing the Laboratory Animal Facility, Third Edition. CRC Press. ISBN 9781498742788
3. Kostomitsopoulos N., Serafetinidou M., Katsarou A., Voyiatzaki C., Dontas I (2015). Evaluation of an environmental enrichment device used for laboratory rabbits. Journal of the Hellenic Veterinary Medical Society 66(1): 41-47.
4. Chriss J. Vowles, Natalie E. Anderson, Kathryn A. Eaton (2015). Gnotobiotic Mouse Technology: An Illustrated Guide. CRC Press. ISBN ISBN 9781498736329
5. Koutroli E , Alexakos P, Kakazanis Z , Symeon I, Balafas E , Voyiatzaki C, Kostomitsopoulos N Effects of using the analgesic tramadol in mice undergoing embryo transfer surgery. Lab Anim (NY). 2014 Apr 21;43(5):167-72
6. Age - related behavior on individually caged rabbits. Journal of the Hellenic veterinary Medical Society 2011, 62(1): 21-28
7. National Research Council (2011) Guide for the care and use of laboratory animals (8th ed.) Washington DC.: National Research Council, National Academic Press
8. Jann Hau, Steven J. Schapiro (2010). Handbook of Laboratory Animal Science, Volume I, Third Edition: Essential Principles and Practices. CRC Press. ISBN 9781420084559
9. Reinhardt A. (2005) Environmental enrichment for rodents and rabbits. Animal Welfare Institute, Washington, DC.
10. National Research Council (USA) (2004). Science, Medicine and Animals. A circle of discovery. Washington DC.: National Research Council, National Academic Press.
11. Harma F.K., Gatlin J., Chapman K.M., Grellhesl D.M., Garcia J.v., Hammer R.E., and Gambers D.L. (2002). Production of transgenic rats by lentiviral transduction of male germ-line stem cells. Proc. Natl. Acad. Sci. USA 99, 14931-14936.

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COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCE - MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8041	SEMESTER	8th
COURSE TITLE	SPECIAL ISSUES OF LABORATORY HEMATOLOGY- BLOOD DONATION		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHIN GHOURS	CREDITS
LECTURES	3	
		6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIALIZED GENERAL KNOWLEDGE
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE294/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the

Upon successful completion of the course the students will be able to:

Combine specialized hematological laboratory tests and laboratory tests of the Immunohematology laboratory for the differential diagnosis of hematological diseases that require transfusion.
Have an understanding of the multifaceted role of Hematology-Blood Donation in an underfunded Hospital Unit.
- Have knowledge of the main cases treated by Hematology-Blood Donation.
- Decide if a blood and blood transfusion is needed.
- Collaborate with patients to take blood with special conditions.
- Use the knowledge of Hematology and Blood Donation for differential diagnosis.

Collaborate with their classmates to create and present a complex hematological passage that requires a transfusion.

earch, analysis and synthesis of data and information, using the necessary technologies.
Working independently.
eamwork.
Work in an interdisciplinary environment.
roduction of free, creative and inductive thinking.

Respect for the natural environment

*Showing social, professional and ethical responsibility and **sensitivity** to gender issues*

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

3. SYLLABUS

1. Organization and administration of hematology laboratory and blood donation.
2. Hematology in underfunded laboratories.
3. Molecular and Cytogenetic analysis
4. Immunophenotyping.
5. Detection of parasites in the blood.
6. Diagnostic radioisotopes in Hematology.
7. Investigation of hemostasis.
8. Investigation of thrombotic mood
9. Laboratory control of anticoagulant, thrombolytic and antiplatelet therapy.
10. Laboratory aspects of transfusion
11. Clinical Cases of Laboratory Hematology-Blood Donation (A).
12. Clinical Cases of Laboratory Hematology-Blood Donation (B).
13. Clinical Cases of Laboratory Hematology-Blood Donation (C).

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	face-to-face lectures in the classroom.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching and laboratory training and use of e-mail and the websiteof the Department for communication with students. Use of the e-clas for the posting and distribution of scientific articles, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	*Semester workload*
Lectures	120
Study and analysis of bibliography	60
Course total	180

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exams (100%) that includes: - Long answer Questions - Multiple Choice Test - Short Answer Questions

5. ATTACHED BIBLIOGRAPHY

academic journals

Al-Sadeq DW, Majdalawieh AF, Nasrallah GK. Seroprevalence and incidence of hepatitis E virus among blood donors: A review. Rev Med Virol. 2017 Sep 6.

Holme PA, Tjønnfjord GE, Batorova A. Continuous infusion of coagulation factor concentrates during intensive treatmen:Haemophilia. 2017 Sep 5.

Andreu G, Boudjedir K, Muller JY, Pouchol E, Ozier Y, Fevre G, Gautreau C, Quaranta JF, Drouet C, Rieux C, Mertes PM, Clavier B, Carlier M, Sandid I. Analysis of Transfusion-Related Acute Lung Injury and Possible Transfusion-Related Acute Lung Injury Reported to the French Hemovigilance Network from 2007 to 2013. Transfus Med Rev. 2017 Jul 15.

Harewood J, Master SR. Transfusion, Hemolytic Reaction. 2017 Jul 31.

Ems T, Huecker MR. Biochemistry, Iron Absorption. 2017 Aug 15. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2017 Jun-. Available from http://www.ncbi.nlm.nih.gov/books/NBK448204/

COURSE OUTLINE

1. GENERAL

SCHOOL	of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8051	**SEMESTER**	8th
COURSE TITLE	SPECIAL ISSUES OF CLINICAL CHEMISTRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the* *course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Theoretical lessons	3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Optional lesson of specification
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Moodle.uniwa.gr

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The students at the end of the course will be familiar the:

biochemical tests on special populations i.e. children, aged people, pregnant women, professional athletes, patients with rare diseases (lysosomal deficiencies, psychiatric diseases),

screening tests for the assessment of infertility in men/women,

special issues about drugs, medicines and nutrition.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*

Search for, analysis and synthesis of data and information with the use of the necessary technology

Working independently

Working in an interdisciplinary environment

3. SYLLABUS

1. **The contribution of Clinical Chemistry to the diagnosis of childhood diseases:** the biochemical laboratory examinations concerning childhood diseases such as congenital hypothyroid, hypercholesterolemia, diabetes, etc.

2. **The biochemical control of childhood obesity:** the clinical chemistry tests i.e enzymes, hormones and other analytes that are carried out in order to diagnose and childhood obesity.

3. **The biochemical control of childhood osteoporosis:** the laboratory and imaging tests that must be carried out to diagnose and monitor childhood osteoporosis.

4. **The contribution of Clinical Chemistry to the diagnosis of rare lysosomal diseases:** the clinical chemistry's analyses or other tests that are required for the diagnosis and monitor of rare lysosomal diseases such as Gaucher, Pompe, MPS, Fabry diseases.

5. **The contribution of Clinical Chemistry to the diagnosis of rare genetic sex-linked and autosomal diseases:** e.g. cystic fibrosis, thalassemia, fragile X syndrome.

6. **The contribution of Clinical Chemistry to the prenatal screening of men and women:** hormonal and biochemical control of the gonads.

7. **The contribution of Clinical Chemistry to pregnancy screening:** hormonal and biochemical monitor for the prevention of genetic diseases and the monitoring of maternal health i.e. 45, X/46, XY gonadal dysgenesis, Turner syndrome, Batten syndrome.

8. **The contribution of Clinical Chemistry to the screening of elderly people:** the biochemical and hormonal diagnostic tests for the monitor of the elderly diseases.

9. **The biochemistry of nutrition:** the ideally intake of carbohydrates, fats and vitamins and their biochemical control, the Mediterranean diet and the biochemical monitor of their beneficial effects on the body.

10. **The contribution of Clinical Chemistry to the monitoring of psychiatric and neurological diseases:** the biochemical, hormonal and blood tests for monitoring of psychiatric and neurological diseases.

11. **The contribution of Clinical Chemistry to the prevention of the effects of drugs and other toxic factors:** the biochemical tests that are carried out in the clinical laboratory to monitor the effects of drugs, smoking and alcohol, the therapeutic drug monitoring (TDM)

12. **The contribution of Clinical Chemistry for the monitoring of sepsis and microbiological infections**.

13. **The biochemistry of exercise:** the most important biochemical tests for the monitoring of the health and performance of amateur and professional athletes.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, Communication with students, Teaching through video

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures with audiovisual media	100
Individual project	40
Student's study hours	40
Course total	180

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Multiple choice questionnaires Short assays during the courses Presentation ofa short essay

5. ATTACHED BIBLIOGRAPHY

Suggested bibliography:

Marshall W, Bangert S. Clinical Chemistry, Εκδόσεις Broken Hill Publishers Ltd, 2000

Plageras P, Papaioannou A. Special courses of clinical chemistry. Broken Hill Publishers Ltd 2012

William J. Marshall & Márta Lapsley & Andrew Day & Ruth Ayling. Clinical Biochemistry: Metabolic and Clinical Aspects. Utopia Publishers 2021

G. Beckett G. Walker S. RAE P, Ashby P. Lecture notes in Clinical Biochemistry, Parisianos Publishers 2010

Lieberman M, Marks A. Basic Medical Biochemistry of Marks: A clinical approach. Parisianos Publishers 2010

Baynes J, Domniczak M. Medical Biochemistry. Parisianos Publishers 2002.

Related academic journals:

Clinical Chemistry
Clinical chemical acta
Journal of clinical chemistry and laboratory medicine
Journal of biomedical science
Critical Reviews in Clinical Laboratory Sciences
Biomarker Research
Advances in Clinical Chemistry
Biological Chemistry
Clinical Biochemist Reviewers
Proteomes
Lipids in health and disease
Proteomics - Clinical Applications
Metabolomics

Disease markers
Journal of Circulating Biomarkers

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Biomedical Sciences - Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**8061**	**COURSE SEMESTER**	**8th**
COURSE TITLE	**SPECIAL ISSUES IN PATHOLOGY-ONCOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	**3**	**6**
-----	**----**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**Special background**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	**-**
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC141/

2. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The students after the end of the course will be able to:

1. Recognize the histopathological lesions and morbid conditions that lead to the development of cancer cells
2. look into his knowledge about histopathology, symptomatology, and prevention of the most common malignant neoplasms

The **scope** of the course is to enable the students to:

1) recognize and understand the histopathological lesions of the various morbid conditions which are the ground for the development of malignant neoplasms, and tumors in general.
2) understand the mechanisms of the development of the main malignant neoplasms, to recognize the risk factors of their development, evaluate their effects upon the human health, and to prevent any fatal outcome of some of them.

3) understand the importance of recent bibliographic data on the most common malignant neoplasms in Greece, Europe and internationally.

The **aim** of the course is to deepen students' knowledge on the most basic histopathological lesions that lead to the malignant transformation and the development of cancer, whereas particular reference is made to the most common types and locations of them.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

environment	*Others…*
Production of new research ideas	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Working in an interdisciplinary environment
- Production of new research ideas
- Production of free, creative, and inductive thinking

3. SYLLABUS

Theory

1. Pathological lesions of the cells and tissues. Necrosis, degeneration, hyperplasia, hypertrophy, atrophy, metaplasia.
2. Apoptosis. Apoptosis indicators. Precancerous conditions.
3. Characteristics of neoplastic cell. Ways of metastasis of neoplastic cell. Tumor markers; predictive and preventive markers**.**
4. Cancer larynx-lung. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
5. Cancer of the stomach, pancreas, liver, colon. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
6. Kidney-bladder. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
7. Adenomatous prostatic hyperplasia. Prostatic-testicular cancer. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
8. Cervicitis. Warts. Cervical cancer. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
9. Adenomatous endometrial hyperplasia-histological types. Corpus uterine cancer. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
10. **F**ibroadenoma. Papilloma. Fibrocystic disease. Breast-ovarian cancer. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
11. Thyroiditis. Autoimmune thyroiditis-Hashimoto's thyroiditis. Thyroid gland cancer. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
12. Fibrosclerotic basal cell carcinoma (morphea-like). Melanoma. Risk factors, precancerous conditions, tumor markers, histological types, symptoms, stages, prognosis.
13. Sarcomas-histological types. Giant cell tumor of bones. Osteosarcoma.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face in lecture hall.

Face-to-face, Distance learning, etc.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of I.C.T. in Teaching for the slide show screen and course presentation and • Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly • Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histopathological images, of light microscope (L/M) and electron microscope (E/M) questionnaires, information for attending of congresses related to course, etc.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures-Introductions. Contributions and Lectures with the use of audiovisual instruments.	140
Study & analysis of bibliography	40
Course total	***180***

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, written work, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other*	**Theory** Writing Final Examination (100%) which includes: • Multiple choice questionnaires • written work • essay/report

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Akslen, Lars A, Watnick, Randolph S. (eds). Biomarkers of the Tumor microenvirement. Basic Studies and Practical Applications, Springer, 2017
2. Allen,Derek C., Cameron, R. Lain (eds). Histopathology Specimens. Clinical, Pathological and Laboratory Aspects. Spinger, 2017
3. Tannock I., Hill R., Bristow R.,Harrington L. The Basic Science of Oncology, 1st edition, Parisianou S.A., 2007
4. Kemp L. Walter, Denis K. Burns and Travis G. Brown. Pathology Pictures 1st Greek. Edition, Medical Editions, P.Ch. Paschalides, S.A., 2010
5. Anthouli-Anagnostopoulou Fr. Histopathology with elements of Oncology. Basic Knowledge. 1st edition, Medical Editions, P.Ch. Paschalides, Athens, 2009.
6. Herrington C. Simon. Muir's Pathology. 1st edition, Broken Hill Publishers Ltd, Cyprus, 2019
7. Nakopoulou Lydia Patsouris Efstratios, Atlas of Pathology, Medical Editions, P.Ch. Paschalides, 2005
8. Underwood J. C. E. General and Systematic Pathology. Editor: Parisianou S.A. , 2007
9. Böcker-Denk-Heitz. Pathologie. Gen. Text Editing Patsouris E., Volumes I, II, III, 3rd edition, Medical Editions, P.Ch. Paschalides, 2004.
10. Kumar V., A. Abbas, J. Aster. Robbins. Basic Pathology, 9th edition (Greek), Medical Editions Parisianou S.A., 2015
11. Böcker-Denk-Heitz. Pathology.1st edition, Volume I, Broken Hill Publishers Ltd, Cyprus, 2011
12. Böcker-Denk-Heitz. Pathology.1st edition, Volume II, Broken Hill Publishers Ltd, Cyprus, 2011
13. Kumar V., A. Abbas, J. Aster. Robbins. Basic Pathology, 5th edition, Parisianou S.A., 2019
14. Kierszenbaun L. Abraham & Laura L. Tres. Histology and Cell Biology. An Introduction to Pathology. 3rd Greek edition. Broken Hill Publishers Ltd, Cyprus, 2013
15. Kemp L. Walter, Denis K. Burns and Travis G. Brown. The Big Picture Pathology. The Mc Grow-Hill Companies Inc., U.S.A., 2008
16. Rosai and Ackerman's Surgical Pathology Review, Damjanov I., Nola M., Mosby, Science Publications, 2006
17. Lever's Histopathology of the Skin, 9th edt,, Lippincott, Williams & Wilkins, 2005
18. S.E. Mills. Sternberg Diagnostic Histopathology, Two Set Volumes, Lippincott Williams Wilkins, 4th edition, 2004
19. Lakhani S.R., S.A. Dilly, C.J. Finlayson. Basic Pathology, 5th edition, Parisianou S.A.,

2019

-Related academic journals:

1. Diagnostic Histopathology, ISSN 17562317, UK
2. International Journal of Clinical and Experimental Pathology, ISSN 19362625, USA
3. Histology and Histopathology, ISSN 02133911, Spain
4. Histopathology, ISSN 13652559, 0309-0167, UK
5. Cytopathology, ISSN 09565507, 13652303, UK
6. Advances in Anatomic Pathology, ISSN 1072-4109, USA
7. American Journal of Pathology, ISSN 0002-9440, USA
8. International Journal of Surgical Pathology, ISSN 1066-8969, USA
9. Journal of Pathology, ISSN 0022-3417, USA
10. Pathology & Oncology Research, ISSN 1219-4956, Netherland
11. The Lancet Oncology, ISSN 14745488, 14702045, UK
12. Gynaecologic Oncology, ISSN 10956859, 00908258, USA
13. Urologic Oncology, ISSN 1078-1439, USA

COURSE OUTLINE

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**8071**	**COURSE SEMESTER**	**8th**
COURSE TITLE	**SPECIAL MEDICAL APPLICATIONS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	**3**	**6**
Laboratory	------	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**Specialized General Background/Mandatory option**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC194/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

Appendix B

- *Guidelines for writing Learning Outcomes*

Aims and Scope

After completing the course the students would be able to:

- know the possibilities of technology,
- have a safe and significant procedure in diagnosis and treatment of patients by using minimal invasive techniques leading in lesser days of hospitalization and lower morbidity and mortality.

The **scope** the course is:

- The rapid development of technology during the late 20th and early 21st centuries brought a revolution to the treatment of patients, by using the application of surgical and endoscopic techniques, which are based exclusively upon new technologies.

The **aim** of the course is:

- the introduction to endoscopies, minimal invasive procedures and,
- the applications of new technology in the classical laboratory and radiology techniques

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Decision-making
- Working independently
- Team work

- Working in an international environment
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

3. SYLLABUS

(1) Endoscopic techniques in in digestive and respiratory system Use of EUS
(2) Laparoscopic procedures (for diagnosis and treatment)
(3) Thoracoscopic procedures (for diagnosis and treatment)
(4) Diagnosis and treatment of cardiovascular diseases in the haemodynamic laboratory
(5) Cardiac surgery operations
(6) Endoscopic vascular techniques
(7) Endoscopic techniques for orthopedic diseases
(8) Endoscopic techniques for urological diseases
(9) Neurosurgical minimal invasive techniques
(10) Minimal invasive techniques for patients with malignant oncologic diseases
(11) New technologies and children
(12) The patient in the I.C.U.
(13) The benefit from the use of new technologies

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face in lecture hall. Use of distance learning methods (use of MS TEAMS)
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation • Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly • Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), questionnaires, tutorials, information for congresses and seminars attendance related to the course and, study and analysis of bibliography.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.*	

Activity	***Semester workload***
Lectures (Use of I.C.T.). Contributions and Lectures with the use of audiovisual instruments.	120
Essay writing (optional)	60
Course total	**180**

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	• Multiple choice questionnaires, • Short-answer questions, • Open-ended questions • Written work (optional) • Oral examination

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. L.Gogou, G. Tsakiris, N.Thalassinos, Fr. Anthouli-Anagnostopoulou, M. Venetikou: Medical Specialties and new Technologies (collective work). Broken Hill Publishers, 1st edition, Nicosia 2017
2. J. Murtagh: General Medicine. Broken Hill Publishers, 2 nd edition, Nicosia 2011

1. GENERAL

SCHOOL	**Health & Care Sciences**		
ACADEMIC UNIT	**Biomedical Sciences**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**8081**	**COURSE SEMESTER**	**8th**
COURSE TITLE	**LABORATORY EVALUATION OF SURGICAL PATIENT**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	**3**	**6**
Laboratory	**------**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	**Special background/Mandatory option**
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	-
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE266/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the*

Qualifications Framework of the European Higher Education Area

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Aims and Scope

After completing the course the students would be able to:

- know which are the abnormal findings, if an operation is urgent (for blood needs),
- what are the pathological specimens and materials,
- manage them, in order to have a complete and significant prompt diagnosis and,
- manage biological and surgical specimen and materials.

The **aim** is the introduction of the students to safe validation of the preoperative and postoperative laboratory findings and the prompt information of the internists or surgeons for the pathological ones.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Search for, analysis and synthesis of data and information,
- with the use of the necessary technology
- Decision-making
- Working independently
- Team work
- Working in an international environment Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

3. SYLLABUS

1. Pre-and post-operative laboratory and imaging examination
2. Urgent operations The laboratory examinations and support

3. Blood need. Preoperative preparation in planned operations and specific operations (Thoracic,cardiac and vascular operations)
4. Infections in surgical patients
5. Management of biopsy and surgical specimens
6. Neoplasmatic diseases (general consideration)
7. Diseases of the digestive tract. Management of the specimen
8. Thoracic and cardiac diseases Management of the specimen
9. Haematological diseases. The importance of lumph nodes and its correct management
10. Urological diseases and diseases of the reproductive tract in men and women, Laboratory investigation.
11. Specimens in Neurosurgery and orthopedic diseases
12. Breast , endocrine glands, skin lesions
13. The importance of the precise and prompt diagnosis for the patient

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Face to face in lecture hall. Use of distance learning methods (use of MS TEAMS)
J	• Use of I.C.T. in Teaching and laboratory education for the slide show screen and course presentation and • use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly • Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), questionnaires, tutorials, information for congresses and seminars attendance related to the course and, study and analysis of bibliography.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* The student's study hours for each learning activity are given	

Activity	***Semester workload***
Lectures (Use of I.C.T.). Contributions and Lectures with the use of audiovisual instruments.	120
Essay writing	60
Course total	**180**

as well as the hours of non-directed study according to the principles of the ECTS	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	• Multiple choice questionnaires, • Short-answer questions, • Open-ended questions • Essay/report (optional)

5. ATTACHED BIBLIOGRAPHY

- *Suggested bibliography:*

1. Doherty Gerard M., Way Laurence W. Current Surgical Diagnosis and Treatment. BROKEN HILL PUBLISHERS LTD, 2018

2. Doherty Gerard M., Lowney Jennifer K., Mason John E., Reznik S., Smith M. Washington Manual of Surgery, BROKEN HILL PUBLISHERS LTD, 2006

3. Androulakis G. Perioperatve Care BROKEN HILL PUBLISHERS LTD, 2001

4. Bonatsos G. Surgical Pathology. BROKEN HILL PUBLISHERS LTD, 2006

5. Antsaklis G. Practice in Surgery. Paschalidis Publishers 2007

COURSE OUTLINE

18. GENERAL

SCHOOL	**Health & Care Sciences**		
DEPARTMENT	**Biomedical Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	**8091**	**COURSE SEMESTER**	**8th**
COURSE TITLE	**LABORATORY AND CLINICAL ENDOCRINOLOGY**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**6**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialization/ Compulsory Elective
PREREQUISITE COURSES:	**-**
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://e class.uniwa.gr/modules/document/?course=BISC187

19. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A*

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

After the end of the course, the student will be able to:

• know the basic principles of hormonal function as well as the control of hormone secretion

• know how to measure hormones and the operating principles of the endocrine laboratory

• know the functioning of the hypothalamus and pituitary system and its malfunctions

• know the main diseases of the thyroid gland, parathyroid glands, and how to investigate them as well as their manifestations

• know the main diseases of the endocrine pancreas as well as their laboratory investigation and monitoring.

• know the basic principles of male and female reproductive endocrinology.

• know the endocrinological control of obesity in children and adults and the relevant therapeutic approach.

• know the endocrinological control of osteoporosis

• know the effect of different types of cancer on the endocrine system

• know the effect of the environment and nutrition on the levels of hormones in the human body.

• know the principles of the effect of the nervous system on the endocrine system.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

Working in an international environment	……
Working in an interdisciplinary environment	*Others…*
Production of new research ideas	…….

• Search, analyse and synthesize data and information using the necessary technologies.

• Work in an interdisciplinary environment

•Team Spirit.

20. SYLLABUS

Theory

1. Basic principles of hormonal function and the control of hormone secretion.

2. How to measure hormones and operating principles of the endocrine laboratory.

3. Hypothalamic pituitary system and its dysfunctions.

4. Major diseases of the thyroid gland, parathyroid glands, and adrenal glands. Way of investigation as well as their manifestations.

5. Diseases of the endocrine pancreas as well as their laboratory investigation and monitoring.

6. Basic principles of male and female reproductive endocrinology.

7. Endocrinological control of obesity in children and adults and the relevant therapeutic approach.

8. Endocrinological control of osteoporosis.

9. Effect of different types of cancer on the endocrinological system.

10. Effect of environment and nutrition on the endocrine system.

11. Effect of the nervous system on the endocrine system - neuroendocrinology.

21. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face in lecture hall, material consolidation exercises with e learning techniques.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	• Use of I.C.T. in Teaching for the slide show screen and course presentation and • Use of e-mail and Web page of the Department for

<table>
<tr><td>Use of ICT in teaching, laboratory education, communication with students</td><td>the students communication, correspondence and notification, accordingly
• Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, information for the observation of congresses related to the teaching lesson of the academic course, etc.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures. Contributions and Lectures with the use of audiovisual instruments.</td><td>100</td></tr><tr><td>Writing a paper</td><td>40</td></tr><tr><td>Independent study</td><td>40</td></tr><tr><td>Course total</td><td>180</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of</td><td>Theory

Writing Final Examination (100%) which includes:
• Short answer questions
• Multiple choice questionnaires</td></tr>
</table>

patient, art interpretation, other *Specifically defined evaluation criteria are given, and if and where they are accessible to students.*	

22. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

COURSE OUTLINE

23. GENERAL

SCHOOL	**Health & Care Sciences**		
DEPARTMENT	**Biomedical Sciences**		
ACADEMIC UNIT	**Medical Laboratories**		
LEVEL OF STUDIES	**Undergraduate**		
COURSE CODE	8101	COURSE SEMESTER	8th
COURSE TITLE	REGENERATIVE MEDICINE METHODOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits.*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	**3**	**6**
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialization/ Compulsory Elective
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	https://e class.uniwa.gr/courses/BISC188/

24. LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.
Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

After the end of the course, the student will be able to:

• know the use of primitive hematopoietic cells in the treatment of various diseases and what are the prospects for new treatments.

• know how to obtain the primordial hematopoietic cells.

• know how to use primitive hematopoietic cells in autologous and heterologous transfusion.

• know the Greek, European and international services that deal with banks of primitive hematopoietic cells and their cooperation.

• know the analyses that are done to control the quality of the genetic material before cryopreservation.

• know the procedures of cryopreservation of biological material.

• know the legal conditions for the operation of cryopreservation banks of primitive hematopoietic cells and what accreditations and certifications they can have.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

• Search, analyse and synthesize data and information using the necessary technologies.

• Work in an interdisciplinary environment.

• Promotion of free, creative and inductive thinking.

25. SYLLABUS

Theory

1. The primordial hematopoietic cells (stemcells). What are hematopoietic stem cells? How and where they are produced, what are their biological properties and how they differ from each other.

2. Transfusion of primitive hematopoietic cells. Autologous and heterologous transfusion of hematopoietic cells. Which is chosen in each case and how are they made.

3. The therapeutic value of primitive hematopoietic cells (I). What diseases are proven to be cured by them.

4. The therapeutic value of primitive hematopoietic cells (II). What research is currently being done on the therapeutic use of primitive hematopoietic cells in diseases where they have not yet been exploited?

5. The reception of primitive hematopoietic cells. How, where and when the primordial hematopoietic cells can be obtained from doctors, health professionals and from the donors themselves.

6. The banks of primitive hematopoietic cells, tissues and blood (stem cells). How are they organized in Greece and with which legal framework?

7. Differences between stem cell, tissue and blood banks. What are the differences between them, in collection, cryopreservation methods, etc.

8. The global Netcord network and the European Eurocord network. What is the global collaboration to search for stem blood cells to give to patients who need them.

9. The isolation of primordial hematopoietic cells from the original sample. What tests are done after receiving the primordial hematopoietic cells.

10. Cryopreservation. The process of freezing and thawing primordial hematopoietic cells in liquid nitrogen refrigerators.

11. Private "stem cell" banks. To whom they are addressed, what they can offer. The individual and family storage of "stem cells". What is the role of the Association of Hellenic Umbilical and Placental Blood Banks (EETOA).

12. What certifications and accreditations can hematopoietic stem cell banks have? Which of them are mandatory for their operation?

13. The accreditation-certification of banks of primitive hematopoietic cells. What are the basic technical requirements?

26. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face to face in lecture hall</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>• Use of I.C.T. in Teaching for the slide show screen and course presentation and
• Use of e-mail and Web page of the Department for the students communication, correspondence and notification, accordingly
• Use of open e-class for the posting and handling of scientific articles, instructions, lectures, useful websites (links), histology images, questionnaires, information for the observation of congresses related to the teaching lesson of the academic course, etc.
• Visit to a stem cell bank.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures.</td><td>120</td></tr><tr><td>Visits</td><td>60</td></tr><tr><td>Course total</td><td>180</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure</td><td>Theory

Writing Final Examination (100%) which includes:

• Short answer questions</td></tr>
</table>

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically defined evaluation criteria are given, and if and where they are accessible to students.*	• Multiple choice questionnaires

27. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Ulrich H, Davidson N. Working with stem cells. Springer editions, 2016.
2. Rich I. Stem cell protocols. Springer editions, 2016.
3. EL-Badri N. Advances in stem cell therapy. Springer editions, 2017.
4. Atala A, Lanza R. Handbook of stem cells, Elsevier editions, 2013
5. Collective work, Stem cells. Sakkoula publications SA, 3009.

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**			
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**			
LEVEL OF STUDIES	**Undergraduate studies**			
COURSE CODE	**8111**	**SEMESTER**	**8th**	
COURSE TITLE	**Infectious Diseases Epidemiology**			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures			3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background/ elective course			
PREREQUISITE COURSES:	–			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	–			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

AIM:

The course aims to introduce students to modern methods of molecular epidemiology as well as to their applications in the epidemiological investigation of infectious diseases and the epidemics they cause

Objectives and expected learning outcomes

Upon completion of the course students will be able to:

- Know and understand the basic concepts and tools of molecular epidemiology.
- Apply molecular epidemiology methods to investigate infectious disease epidemics and their applications in public health issues (prevention and intervention policies).
- Know and understand modern tools and phylogenetic programs applied in molecular epidemiology methods.
- Use general texts, reference books and several other resources to further develop knowledge through continuous independent learning.
- Carry out a series of analyzes using pipelines and programs, which are applied in molecular epidemiology studies, proving development of practical scientific skills.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Teamwork
- Working in an interdisciplinary environment
- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

3. SYLLABUS

Lectures

1. Introduction to molecular epidemiology: Introductory concepts and applications of molecular epidemiology in the epidemiological study of infectious diseases and their relevant epidemics.
2. Basic principles of molecular Epidemiology. Molecular evolution and phylogenetic analysis. File types
3. Alignment of Biological Macromolecule Sequences and Alignment Algorithms.
4. Nucleotide replacement models
5. Phylogenetic Analysis Methods: Distance and maximum parsimony methods
6. Maximum likelihood method
7. Introduction Bayesian inference in phylogenetic analysis
8. Introduction to the concept of Molecular Clock in Phylogenetic Analysis
9. Phylodynamics and Phylogeny
10. Phylogenetic Analysis and Genetic Recombination
11. Applications of molecular epidemiology. Epidemiological investigation of infectious

diseases and study of epidemics.

Laboratory / tutorial exercises

1) Nucleotide sequence storage forms, 2) Alignment algorithms and nucleotide sequences alignments manipulation/trimming correction, 3)Phylogenetic analysis using various methods, Phylogenetic Molecular Clock Analysis (BEAUti/BEAST), Recombination Analysis Methods

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively. • Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	17
	Laboratory/Tutorial Exercises	9
	Interactive Teaching	0
	Project elaboration	
	Essay writing	13
	Educational visits	13
	Independent Study & Bibliography Analysis	0
	Course total	**90**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	1. Written final exam (60%) that includes: • Multiple choice questions • Short Answer Questions • Open response questions • Critical thinking questions, theory understanding questions and evaluation of way of thinking questions • Problem Solving Students, when given the questions, are informed about how to evaluate each group of topics, depending on their degree of difficulty. The evaluation takes into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency. 2. Paper Presentation (40%) The theory is examined in the final exam, while in case of individual or teamwork, the grade of the latter participates up to 40% in the formation of the grade of the course

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek

1. Hand notes and pptx presentations from lectures

B. In English

1. The Phylogenetic Handbook: A Practical Approach to Phylogenetic Analysis and Hypothesis Testing 2nd Edition, 2009 by Philippe Lemey (Editor), Marco Salemi (Editor), Anne-Mieke Vandamme (Editor)
2. An Introduction to Molecular Evolution and Phylogenetics, 2016 by Lindell Bromham (Author)

COURSE OUTLINE

1. GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
SECTOR	Medical Laboratories		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	**8141**	**SEMESTER**	8th
COURSE TITLE	**NUTRITION AND HEALTH**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	6

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SBC/CE SPECIAL BACKGROUND COURSE / COMPULSORY ELECTIVE
Prerequisite Courses	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC142/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B Guidelines for writing Learning Outcomes*

After successful completion of the course the student will be able to:

- know about nutrition and nutrition education through life in order to maintain and health promotion.
- know about the methods and techniques for the evaluation of nutritional status, handling body weight as well as the analyses and writing up of diet plans
- contribute in the diagnosis of diseases relating to dietary habits, eating disorders and food relating risks
- understand dietary models, claims regarding nutrition and health, the interactions between medicines and food and the methods of research in relation to nutrition
- appreciate new dietary trends and knows the role and their importance.

The aim of the course is for the students to understand the basic principles about nutrition, the importance of the nutrients and the energy metabolism during the life cycle of the human. To know the current dietary models, the new dietary trends and dietary risks. To know how to evaluate the nutritional status of a patient clinically and with laboratory tests as well as the interventions for the prevention and treatment of nutrition related diseases. To learn the basics about making up and analyzing a diet plan, food safety, nutrition research and nutrition education.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Project planning and management*
- *Respect for difference and multiculturalism*
- *Showing social, professional and ethical responsibility andsensitivity to gender issues*
- *Criticism and self-criticism*
- *Production of free, creative and inductive thinking*

- Decision making
- Working independently
- Working in an interdisciplinary environment
- Producing new research ideas
- Project planning and management
- Respect for difference and multiculturalism

3. SYLLABUS

1. Introduction. Relation between Nutrition and Health. Nutrition Education
2. Nutrients. Food groups. Equivalent food and feed. Digestion. Metabolism. Rating energy needs and balance. Normal body weight.
3. Nutrition evaluation. Assessment of nutritional status. Anthropometry
4. Principles diet. Diets. Analysis of dietary patterns. Nutritional information
5. Nutritional standards. Mediterranean diet. Claims about nutrition and health
6. Consumer and food. Precepts of food preparation and consumption
7. Food Safety and Health. Dietary risks. HACCP.
8. Nutrition during the life cycle. Nutrition and Exercise. Nutrition and aesthetics
9. Nutrition related diseases. Eating disorders
10. Food-Drug interactions. Alcohol. Food additives
11. New nutrition trends (organic – genetically modified – functional foods – nutraceuticals). Food supplements and products for specialized dietary needs
12. Metabolic syndrome. Obesity. Weight management.
13. Nutrition research methodology. Nutrigenomics. Nutrigenetics.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc*	Face to face in the classroom
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT for teaching. Use of email and department site for communication with students E-class for communication uploading scientific articles, guidelines, lectures, useful links, questionnaires, information regarding scientific congresses and seminars

<table>
<tr><td></td><td>relevant to the course etc..</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures-Presentations using audiovisual media.</td><td>120</td></tr><tr><td>Self -Study</td><td>60</td></tr><tr><td>Course total</td><td>180</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, openended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final examination:

Essay questions
Multiple choice questions
Short answer questions</td></tr>
</table>

6. **RECOMMENDED** BIBLIOGRAPHY

1. Χανιώτης Δ. Διατροφή και Υγεία. Ιατρικές Εκδόσεις Λίτσας, 2014. (Εύδοξος: 41955717)

2. Krause's*Κλινική Διατροφή*. Ιατρικές Εκδόσεις Λίτσας, 2012.

3. Πλέσσα Σ. Διαιτητική του Ανθρώπου. Εκδόσεις Φάρμακον Τύπος, 2010

4. Κατσιλάμπρος Ν. Κλινική Διατροφή. Εκδ. Βητα 2010.

5. BiesalskiHK., GrimmP. Εγχειρίδιο Διατροφής. BrokenHillPubl. Ltd ,2008.

6. EFSA. Ευρωπαϊκή Αρχή για την Ασφάλεια των Τροφίμων (EFSA. Διαθέσιμο στο: http://www.efsa.europa.eu

7. Ανώτατο Ειδικό Επιστημονικό Συμβούλιο Υγείας. Διατροφικές οδηγίες για ενήλικες στην Ελλάδα. Ανώτατο Ειδικό Επιστημονικό Συμβούλιο Υγείας και Πρόνοιας, Αθήνα (Διαθέσιμο στο: Αρχεία Ελληνικής Ιατρικής 1999, 16(6):615-625).

COURSE OUTLINE

1. GENERAL

SCHOOL	*SCHOOL OF HEALTH AND CARE SCIENCES*			
ACADEMICUNIT	**Department of Biomedical Sciences – Medical laboratories**			
LEVELOFSTUDIES	**Undergraduate studies**			
COURSECODE	**8121**	**SEMESTER**	8^{th}	
COURSETITLE	**Water and Food Microbiology**			
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures ,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*			**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures			3	3
Add rows if necessary. The organization of teaching and the teaching methods use dare described in detail at (d).				
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background/ Elective course			
PREREQUISITE COURSES:	-			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO			
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
criptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
delines for writing Learning Outcomes

The course aims to understand the Microbiology of water, food and wastewater and the role of various microorganisms in these habitats. The applications of Microbiology in the specific environments, the development of analysis protocols of the various microorganisms found in them, the Legislations that govern them and determine their management will be described. It will study in detail the microbiological / epidemiological part of waterborne and foodborne infections, their direct correlation with nosocomial infections and humans and how the primary and secondary health care facilities are affected. Additionally, how the modern industry is affected and implicated to the specific environments (eg waste water treatment plants processing units, bottling plants processing units and many more). Finally, it is important for the Biomedical Scientist to understand his role not only in the Healthcare sector, but also in the water, food and waste water industry and to go deeper in dealing with and managing the 'risks' that arise in these areas (e.g. Risk Assessment, how to approach each environment separately, the legislation governing these habitats etc.) using microbiology as its main tool.

Objectives and expected learning outcomes

Upon completion of the course students will be able to know and understand:

- The abundance, distribution and biodiversity of microorganisms and their interactions with the environment.
- The early detection, diagnosis and treatment of food- and waterborne diseases and their association with nosocomial infections.
- The Microbial communities and their applications in waste treatment systems, in the food and water industry.
- The laws governing food and waterborne infections and the European and National bodies that monitor them.
- The classical and modern molecular techniques that find application in environmental microbiology.
- How to use reference books, papers from the literature and a range of other resources to further develop knowledge through continuous independent learning.
- The way of developing a research work either individually or in groups (searching the relevant literature, evaluating the data and writing).

Adapting to new situations Decision-making Working independently Teamwork Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

-
- Search, analysis and synthesis of data and information, using the necessary technologies
- Autonomous individual work
- Teamwork
- Work in an interdisciplinary environment
- Work in an international environment
- Production of new research ideas
- Promotion of free, creative and inductive thinking

3. SYLLABUS

1. Introduction to waterborne infections: Aquatic ecosystem microorganisms. Routes of transmission, survival and multiplication of pathogens in the aquatic environment, development through biofilm formation in the water systems, sanitary importance of physical, chemical and microbiological parameters, drinking water legislation.

2. Introduction to foodborne infections: Microorganisms in food. Routes of transmission, survival and multiplication of pathogens in food, health importance of physical, chemical and microbiological parameters of food, food management in mass catering kitchens (HACCP).

3. Pathogens of waterborne and foodborne infections: Anthropogenic pathogens. Pathogens that are naturally found in the flora of water and food, production of toxins by bacteria and fungi. Water and Food viruses and parasites.

4. Microbiology in the food industry: Application of microbiology and the role of microorganisms in the food industry, and the development of analysis protocols for the various microorganisms found in these environments. Legislation concerning various categories of industrially produced food (canning, dairy products, meat production units, bread industry). The quality of water used in the food industry.

5. Aquatic and foodborne infections as part of nosocomial infections: HACCP in hospital kitchen. Artificial kidney units, ICUs, Dental clinics. Legionnaires' disease, a major nosocomial infection. Reporting, treatment and surveillance of water- and foodborne infections (Risk Assessment).

6. Occupational hygiene and water quality in hospitals and other workplaces: Transmission of waterborne infections. Asthma, the disease of legionnaires, the sick building syndrome and the effects on employees.

7. Bottled water and inpatients: Categories of bottled water / pathogenic microorganisms in bottling units. Special characteristics and hazard depending on the water category. Bottled water as a type of water used widely in the hospital. The special case of pseudomonas.

8. Methods of analysis of water samples: Multi-tube method, integration method, filtration method, coating method, molecular isolation techniques, identification and epidemiological correlation.

9. Food sample analysis methods: Physical / physicochemical methods. Spectrophotometric and Chromatographic methods. Methods for detection of microbiological parameters in food in accordance with International Standards (ISO). Phenotypic and Molecular typing techniques / Correlation of the cause with the infection.

10. Food and waterborne infections in residential and catering areas of vulnerable groups: Specific quality specifications and legislation for the management of water and food in residential and catering areas of vulnerable groups of the population (nursing homes, kindergartens, rehabilitation and recovery units, camps, military installations).

11. Water quality of hydrotherapy tanks and thermal baths: Legislative regulations of

hydrotherapy baths and hydrotherapy tanks. Special requirements for spa water tanks. The importance of early detection and analysis of microbiological parameters in the specific environments.

12. Sewage microbiology: Sewage as the main source of pathogenic microorganisms. Legislation for urban wastewater. Specifications for wastewater disposal in water and soil. Sewage Treatment Plants.

13. Environmental legislation, management and disposal of hospital wastewater: Legislative regulations for hospital wastewater. The presence of bacteria resistant to widely used antibiotics in the effluent. Detection of resistance genes (phenotypic / molecular methods) as a tool for monitoring multi-drug resistance in the wastewater habitat.

4. TEACHING and LEARNING METHODS-EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning ,etc.</td><td>Face to face lectures</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching

• Projective system and possibility of presentation with the application of the Power Point Program.
• Use of internet connection
• Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR
• Use of the e-mail and the website of the Department for the communication and information of the students respectively.
• Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, field work, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Laboratory practice</td><td>0</td></tr>
<tr><td>Interactive teaching</td><td>12</td></tr>
<tr><td>Project</td><td>13</td></tr>
<tr><td>Essay writing</td><td>13</td></tr>
<tr><td>Educational visits</td><td>0</td></tr>
<tr><td>Study and analysis of bibliography</td><td>13</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other

Specifically-defined evaluation criteria re given, and if and where they are accessible to students.</td><td>1. Written final exam (60%) that includes:
• Multiple choice questions
• Short Answer Questions
• Development questions
• Questions of judgment, understanding of theory and evaluation of way of thinking
• Problem Solving

The students are informed on how to evaluate each group of topics, depending on their degree of difficulty. The completeness of the answer, the clarity, the degree of critical thinking of the student and the language adequacy are taken into account for the final evaluation.

2. Paper Presentation (40%):
Individual or group works are presented by the students and the grade of the latter participates up to 40% in the shaping of the final grade of the course.</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

A. In Greek

1. *Papadopoulou Chrysanthi, Food Microbiology and Hygiene: Food microbiology Methods (3rd edn) KOSTARAKII PUBLICATIONS, 2015*

2. *Papapetropoulou Maria, Mavridou Athena, Microbiology of Water environment, TRAVLOS PUBLICATIONS, 1995*

B.In English

1. WHO Guidelines in http://www.who.int/publications/guidelines/en/

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**8131**	**SEMESTER**	**8th**
COURSE TITLE	**Hygiene-Epidemiology-Public Health**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background/ elective course		
PREREQUISITE COURSES:	_		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	_		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

AIM:

The course material aims to introduce students to the basic concepts of hygiene as well as to develop their ability to understand the basic concepts of hygiene, epidemics including types of epidemiological studies as well as applications in Public Health issues. Moreover, the course aims to make students understand the difference between various epidemiological studies, studying and analyzing the physical, chemical, biological and ergonomic factors that affect the health of workers in areas and laboratories that provide health and diagnostic services. The knowledge of Hygiene and Epidemiology, that is the distribution and development of diseases and the factors that shape or can affect them, is important for the comprehensive assessment of the health of individuals and populations; is a prerequisite for the differential diagnosis and evaluation of therapeutic efficacy, provides the basis for all Public Health issues and is essential for monitoring the current literature and conducting biomedical research.

Objectives and expected learning outcomes

Upon completion of the course students will be able to:

- Explain the principles of diseases with special emphasis on changing environmental factors.
- Promote the application of Epidemiology and Hygiene in the prevention of diseases and the provision of both environmental and related to biomedical laboratories health.
- Study health professionals, as well as the services they provide in relation to health and the growing need for care services.
- Ensure good performance both in terms of prevention and precaution.
- Establish the basis of continuous interest in Epidemiology.
- Understand the role of epidemiology in assessing the effectiveness and adequacy of care and health by community services.
- Understand the modern practical applications of laboratory virology in clinical practice.
- Use general texts, reference books and a range of other resources to further develop knowledge through continuous independent learning

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Teamwork
- Working in an interdisciplinary environment
- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

3. SYLLABUS

Lectures

Historical review. Purposes, methods and uses of Epidemiology and Hygiene in Public Health. The modern prism of Epidemiological data. Study of epidemiological features. Perspectives and retrospective research. Epidemiological view of preventive interventions. Types and uses of epidemiological studies in matters of hygiene and Public Health.

The modules of the course include the following:

- Introductory concepts: Health and Epidemiology, Health, Disease, Public Health. Historical review, purposes and uses, etiology and classification in Epidemiology. Sources of data: censuses, population' s physical movement, morbidity statistics, disease reporting, mortality statistics, hospital statistics, disease records.
- Research Planning in Epidemiology-Types of epidemiological research
- Morbidity rates-mortality rates. Descriptive Epidemiology. Characteristics of persons, place, time. Prospective research. Retrospective surveys.
- Data Sources-Epidemiological Surveillance.
- Descriptive Epidemiological Research.
- Analytical Epidemiology-Formulation and Control of Causal Cases
- Perspective studies-Retrospective studies.
- Experimental Research-Evaluation of Preventive and Therapeutic Measures.
- Clinical Epidemiology-Diagnosis, Prognosis and Prognostic Indicators.
- Ethics in Clinical and Epidemiological Research.
- Epidemiology of Infectious Diseases.
- Epidemiology of Genetic Diseases.
- Environmental Epidemiology. General review of the Environment. Environmental factors. Environmental risks to Public Health. Environmental Hygiene Conditions. Surface and groundwater. Uses and required quality per use for the protection of Public Health
- Introduction to Disinfection and Sterilization: General Chemistry Elements-Chemical disinfection and sterilization. Natural methods of disinfection-sterilization. Bacterial resistance and resistance of microorganisms to disinfectants. Antiseptic and antiseptics-Hand washing and antiseptic. Instructions, ISO Standards.
- Epidemiology of Diseases of Global Interest - Global Health.
- Summary-Current Epidemiological Topics.
- Public Hygiene and Public Health: Sources of Information on Hygiene and Health-Evaluation. International Health Organizations (Legal Framework) / Council of Europe. World Health Organization (WHO). European Union and Public Health.
- Disease Prevention-Health Promotion-Strategies. Prevention levels-application fields. Primary Health Care. The concept of health promotion. Methodology, ways, places of health education, characteristics. Institutions (Agencies) dealing with health education in Greece.
- Preventive Measures for Isolation of Patients. Very resistant pathogenic microorganisms, control measures.
- Impact and Characteristics of Endemic and Epidemic Infections.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet

<table>
<tr><td></td><td>

- Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR
- Use of the e-mail and the website of the Department for the communication and the updating information of the students respectively.
- Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)

</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>39</td></tr>
<tr><td>Laboratory/Tutorial Exercises</td><td>0</td></tr>
<tr><td>Interactive Teaching</td><td>12</td></tr>
<tr><td>Project elaboration</td><td>13</td></tr>
<tr><td>Essay writing</td><td>13</td></tr>
<tr><td>Educational visits</td><td>0</td></tr>
<tr><td>Independent Study & Bibliography Analysis</td><td>13</td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>1. Written final exam (60%) that includes:

- Multiple choice questions
- Short Answer Questions
- Open response questions
- Critical thinking questions, theory understanding questions and evaluation of way of thinking questions
- Problem Solving

Students, when given the questions, are informed about how to evaluate each group of topics, depending on their degree of difficulty. The evaluation takes into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency.

2. Paper Presentation (40%)

The theory is examined in the final exam, while in case of individual or teamwork, the grade of the latter participates up to 40% in the formation of the grade of the course</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek

1. Farmer Richard, Lavrenson Ross, Miller David. Epidemiology and Medical Public Health (Translated in Greek edn) PARISIANOU PUBLICATIONS, 2010
2. Trichopoulos D. General and Clinical Epidemiology. PARISIANOU PUBLICATIONS, 2002
3. Rothman KJ and Greenland KJ. Modern Epidemiology, (Translated in Greek edn) 2nd Edition, Lippincott-Raven, Philadelphia, 1998
4. Fraise A.P., Lambert P.A., Maillard J.Y. Principles and methods of disinfection, maintenance and sterilization. (Translated in Greek edn) PARISIANOU PUBLICATIONS, 2008
5. Xirouchaki E. Hygiene and Epidemiology in Nosocomial environments. (Translated in Greek edn) SYMMETRIA PUBLICATIONS, 2000
6. Trichopoulos D..et al, Preventive Medicine and Public Health. ZITA PUBLICATIONS, 2000
7. Avlonitis S. Environmental Protection. (Translated in Greek edn) ION PUBLICATIONS, 2014
8. Chatzibiros K. Οικολογία Οικοσυστήματα και προστασία του περιβάλλοντος. 3rd edn (Translated in Greek edn) SYMMETRIA PUBLICATIONS, 2007

B. In English

1. Lisa F. Beckman, Ichiro Kawachi. Social Epidemiology, 2000
2. B. Bannister, S. Gillespier, J. Jones: Infectious Diseases. PARISIANOU PUBLICATIONS, 2008
3. Ross C. Brownson, Diana B. Pettiti, Applied Epidemiology: Theory to Practice, 1998
4. Gerald McDonnell. Antisepsis, Disinfection, and Sterilization: Types, Actions, and Resistance. WASHINGTON, DC. 2007
5. N.I.O.S.H. (2001) Chemical Disinfectants. Recommended Guidelines for controlling non infections health hazards in hospitals p. 3-12
6. Ιστοσελίδες www.apic.org, www.cdc.gov
7. Frumkin H. Environmental Health: From Global to Local. 2nd edition, Jossey-Bass 2010
8. Moeller D.W. Environmental Health. 3rd edition, Harvard University Press, 2009

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
DEPARTMENT	**BIOMEDICAL SCIENCES**		
SECTION	**Medical Laboratories**		
LEVEL OF STUDIES	**UNDERGRADUATE**		
COURSE CODE	**8151**	**SEMESTER**	**8th**
TITLE	**Pattern Recognition in Medical Images**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**HOURS/WEEK**	**CREDITS**
Lectures	**3**	**6**
Lab	0	
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	**Special Foundation Course (SFC)**	
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/BISC175/	

2. LEARNING OUTCOMES

Learningoutcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*

Guidelines for writing Learning Outcomes

Upon successful completion of the course the student will be able:

• To be familiar with the design and operation of medical image analysis systems used in Medicine (histopathological image analysis system, radiological image, biological image, hematology, microscope images).

• To have knowledge of the methodologies for mathematical quantification of texture

properties, edge and other properties of the image (e.g. homogeneity texture- inhomogeneity texture).

• To have knowledge of the methods of classification into categories (e.g. benign - malignant cancer) of images based on the quantified properties of the medical image (texture characteristics- features of 1st class, 2nd class, etc.).

• To have knowledge of the methods of evaluating the quality of medical image analysis systems (Leave one out method- Exhaustive search).

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*
- *Search for analysis, synthesis of data information with the use of the necessary technology*
- *Adapting to new situations*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment new research ideas*

- Search, analysis and synthesis of data and information, using the necessary technologies
- Individual assignments
- Group assignments
- Work in an interdisciplinary environment
- Promoting free, creative and inductive thinking

3. COURSE SYLLABUS

Course aim:

Pattern Recognition System is a Decision Support System (DSS) that gives a possible diagnosis which is taken into account by the pathologist, in order to make the final diagnosis. With a command in the program, a series of elements from the image are collected (texture characteristics - a series of numbers that express the texture of the cell nucleus), on the basis of which a possible diagnosis of a degree of malignancy is made.

The analysis of medical images is important in extracting useful information, in describing and classifying them in the computer. Image analysis differs from other types of image processing methods, such as restoration and quality optimization, as the final outcome is usually numerical rather than virtual. Consequently, image resolution is not concerned with improving image quality. It deals with the diagnosis, in a similar way that the pathologist examines an image: The computer examines the image, detects and quantifies features and properties of the image and suggests a possible diagnosis (e.g. benign - malignant cancer). A medical image analysis system includes: Production of features that quantify medical image

properties, system design with methods of classification and evaluation of system reliability.

Course objective:

The student can formulate with a mathematical approach the structure of the image analysis systems used in Medicine.

Course field:

The subject of Pattern Recognition briefly includes the following sections:

- Medical image analysis
- Data acquisition - Samples preparation
- Data processing
- Image resolution - Feature extraction
- Pattern Classification
- Integrated system design
- Methods of evaluation and reliability of the system

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc</td><td>Theoretical lessons are carried out in the classroom. Lab work is carried out in the section’s X-ray rooms.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching and laboratory training and the use of e-mail and the website of the Department for communication and information of students respectively.

Use of the e-class for the posting and distribution of scientific articles, instructions, lectures, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non directed study according to the principles of the ECTS</td><td><table><tr><th>Activities</th><th>Semester workload</th></tr><tr><td>Lectures</td><td>90</td></tr><tr><td>Laboratory work</td><td></td></tr><tr><td>Individual study</td><td></td></tr><tr><td>Course total</td><td>90</td></tr></table></td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive,</td><td>Theory

Written final exam (100%) that includes:
– Development Questions
– Multiple Choice Test
– Short Answer Questions</td></tr>
</table>

multiple choice questionnaires, short-answer questions, open ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Lab** Written and oral examination.

5. RECOMMENDED BIBLIOGRAPHY

1. Ιστοπαθολογία με στοιχεία ογκολογίας. Ανθούλη - Αναγνωστοπούλου Φρατζέσκα, Ιατρικές Εκδόσεις Π.Χ. Πασχαλίδης (2009).
2. Bocchi L., Coppini G., De Dominicis R. and Valli G. "Tissue characterization from X-ray images". Med. Eng. Phys. 19, 336-342 (1997).
3. Fu K.S. and Pavlidis T. "Biomedical pattern recognition and image processing". Verlag Chemie (1979).
4. Galloway M.M. "Texture analysis using gray level run lengths". Computer graphics image processing 4, 172-179 (1975).
5. Gonzalez R.C. and Wintz P. "Digital Image Processing". Addison-Wesley (1977).
6. Halarick R.M., Shanmugam K., Dinstein I. "Textural features for image classification". IEEE Trans Sys Man Cyber, SCM - 3, 6 (1973).
7. Jain A.K. "Fundamentals of digital image processing". Prentice-Hall (1989).
8. Lachebruch P.A. "Discriminant Analysis". Hafner Press (1975) / Low A. "Computer vision and image processing". McGraw-Hill (1991).
9. M. Hajmeer, I. Basheer. "A probabilistic neural network approach for modeling and classification of bacterial growth/no-growth data", Journal of Microbiological Methods, 51, 217-226 (2002).
10. BC BioLibrary 2008, Hematoxylin and Eosin Staining of Tissue Sections.
11. Immunostaining Technique, 1994-2011 Millipore Corporation.
12. Spiros Kostopoulos, Dimitris Glotsos, Dionisis Cavouras, Antonis Daskalakis, Ioannis Kalatzis, Pantelis Georgiadis, Panagiotis Bougioukos, Panagiota Ravazoula and George Nikiforidis. “ANALYTICAL AND QUANTITATIVE CYTOLOGY AND HISTOLOGY, Computer – Based Association of the Texture of Expressed Estrogen Receptor Nuclei with Histologic Grade Using Immunohistochemically - Stained Breast Carcinomas”, pp.187-196.
13. Microscope Basics and Beyond by Mortimer Abramowitz, Fellow, New York, Microscopical Society, For Olympus America Inc., Volume 1, Revised 2003 http://kpe-kastor.kas.sch.gr/ergastiriakos_odigos/introduction/optical.htm

COURSE OUTLINE

1. GENERAL

SCHOOL	**SCHOOL OF HEALTH AND CARE SCIENCES**		
ACADEMIC UNIT	**Department of Biomedical Sciences – Medical laboratories**		
LEVEL OF STUDIES	**Undergraduate studies**		
COURSE CODE	**8161**	**SEMESTER**	**8th**
COURSE TITLE	**Bioethics**		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background/ elective course		
PREREQUISITE COURSES:	_		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	_		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

AIM:

The course aims to inform students and to challenge their global and creative thinking on key issues of bioethics, which are implemented in biomedical practice and research. In addition, it aims at highlighting the importance of scientific and ethical documentation for the development of argumentation and for the final decision-making in emerging dilemmas.

Objectives and expected learning outcomes

Upon completion of the course students will be able to:

- know and understand the basic concepts of bioethics
- know and understand the bioethics issues that arise in the applications of bio medicine
- develop a scientifically and ethically sound view of Bioethics issues
- use general texts, reference books and several other resources to further develop

knowledge through continuous independent learning.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Teamwork

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working independently
- Teamwork
- Working in an interdisciplinary environment
- Working in an international environment
- Production of new research ideas
- Production of free, creative and inductive thinking

3. SYLLABUS

Lectures

1. Introduction to Bio ethics
- History of "Ethics" (Aristotle), "Medical Ethics" (The Oath of Hippocrates) and "Bioethics" (Van Rensselaer Potter)
- How and when the urgent need for Bioethics arose (Nazi crimes and the Nuremberg trials)
- Fundamental principles of Bioethics (Respect for autonomy, principle of non-harm, principle of benevolence and principle of justice)
- Aim of Bioethics

2. International and European regulatory texts
- International and European regulatory texts
- Nuremberg Code
- Helsinki Declaration
- Oviedo Convention
- Protocol to the Oviedo Convention
- UNESCO Declaration

- The Ethics Committees, the Bioethics Committees and their role (at the level of Educational Institutions, Research Institutions, National and International)

3. Medical Ethics-The doctor-patient relationship

- The doctor-patient relationship and its characteristics. Projection of the characteristics in the relationship of all health professionals with the patient
- Ethics of health professionals, professional duty, moral duty
- Obligations and rights of health professionals, obligations and rights of patients
- Scientific freedom
- Medical confidentiality and the protection of sensitive health data
- Exercises- Practical problems
- Relevant national legislation

4. Decisions towards the end of life

- "Non-resuscitation" instructions
- Wills of life
- Consent through a representative for decisions at the end of life
- Assisted suicide
- Euthanasia (active and passive)
- Exercises-Practical problems
- Relevant national legislation

5. Organ transplantation

- Brain death and conditions for organ donation
- Presumed consent
- Commercialization of the human body
- Xenotransplantation
- Exercises-Practical problems
- Relevant national legislation

6. Laboratory animals

- The moral status of animals
- The importance of preclinical studies in laboratory animals
- Categorization of laboratory animals (eg vertebrates, invertebrates)
- Breeding and experimental conditions in laboratory animals
- The principle of the three "R" (Replacement, Reduction, and Refinement)
- Exercises-Practical problems
- Relevant national legislation

7. Human participation in clinical studies and research

- Participation of adults in clinical trials
- Participation of children and adolescents in clinical trials
- Participation of individuals uncapable to consent in clinical trials
- Participation in research
- Exercises-Practical problems
- Relevant national legislation

8. Medically assisted reproduction

- Donation and commercialization of gametes
- Revealing the identity of gamete donors
- Ethical dilemmas in antenatal care and preimplantation testing
- Ethical dilemmas in the fertilization of three parents (mitochondrial replacement).
- Surrogacy
- Exercises-Practical problems.

- Relevant national legislation

9. Cloning-Stem cells

- Mammalian (and human) cloning
- Human cloning as a treatment for infertility
- Human cloning for organ production
- Therapeutic cloning with stem cells
- Fetal research
- Exercises-Practical problems
- Relevant national legislation

10. Genetic tests

- Updated consent
- The right to ignorance
- Random findings in clinical practice and research
- The risk of genetic discrimination and stigma
- The new trend-Genetic testing directly to consumers
- Exercises-Practical problems
- Relevant national legislation

11. Genetically Modified Organisms

- Conservation of biodiversity
- Environmental ethics
- The right of the next generations
- Synthetic biology
- Bioterrorism
- Exercises-Practical problems
- Relevant national legislation

12. Patents in biomedicine

- Patents in genetic material
- Patents in the methods of studying genetic material
- Patents in genetically modified organisms
- Exercises-Practical problems
- Relevant national legislation

13. Virtual Bioethics Committees

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	• Use of audiovisual media (ICT) in the face-to-face lectures • Use of a projector-laptop system which provides the possibility of presentation with the application of the Power Point Program. • Ability to connect to the internet • Use of bibliographic search engines HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR • Use of the e-mail and the website of the Department for the communication and the updating information of the students

<table>
<tr><td></td><td>respectively.
• Use of the e-class page of the course for posting and distributing useful material (power point presentations, scientific articles, instructions, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.)</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>36</td></tr>
<tr><td>Laboratory/Tutorial Exercises</td><td>9</td></tr>
<tr><td>Interactive Teaching</td><td>0</td></tr>
<tr><td>Project elaboration</td><td></td></tr>
<tr><td>Essay writing</td><td>23</td></tr>
<tr><td>Educational visits</td><td>0</td></tr>
<tr><td>Independent Study & Bibliography Analysis</td><td>31</td></tr>
<tr><td>Course total</td><td>90</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>1. Written final exam (60%) that includes:
• Multiple choice questions
• Short Answer Questions
• Open response questions
• Critical thinking questions, theory understanding questions and evaluation of way of thinking questions
• Problem Solving
Students, when given the questions, are informed about how to evaluate each group of topics, depending on their degree of difficulty. The evaluation takes into account the completeness of the answer, clarity, the degree of critical thinking of the student and language proficiency.

2. Paper Presentation (40%)
The theory is examined in the final exam, while in case of individual or teamwork, the grade of the latter participates up to 40% in the formation of the grade of the course</td></tr>
</table>

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

A. In Greek

1. Emmanouil Saridakis: Bioethics – Ethics issues in Biomedical Technologies. PAPAZISI PUBLICATIONS, 2008
2. Stamatis Alachiotis: Bioethics – Refers in genetic and technological frontiers. LIVANIS PUBLICATIONS, 2011

B. English

3. Singer Peter The Cambridge text of bioethics University of Oxford, 2008
4. Michael Boylan Medical Ethics, Wiley, 2nd edition

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCE - MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8171	SEMESTER	8th
COURSE TITLE	TRANSFUSION THERAPY- HISTOCOMPATIBILITY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHIN GHOURS	CREDITS
LECTURES	3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SPECIALIZED GENERAL KNOWLEDGE
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/TIE295/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the

Upon successful completion of the course the students will be able to:

Combine their specialized knowledge for the proper transfusion of blood and derivatives as well as knowingthe importance of histocompatibility.

Understands the multifaceted role of histocompatibility and umbilical cord blood collection.

Have knowledge of the main cases treated by Transfusion Therapy and Histocompatibility.

Distinguish clinical reactions from transplantation.

Collaborate with patients to take blood and perform special tests before and after the transplant / transfusion.

Use knowledge of Hematology, Immunology and Blood Donation for the science of Histocompatibility.

Collaborate with their classmates to create and present cases who need a transfusion and transplantation.

General Competences

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management Respect for difference and multiculturalism Respect for the natural environment*
Adapting to new situations *Decision-making*	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Working independently *Team work*	*Criticism and self-criticism*
Working in an international environment *Working in an interdisciplinary environment* *Production of new research ideas*	*Production of free, creative and inductive thinking* *……* *Others…* *…….*

Search, analysis and synthesis of data and information, using the necessary technologies.
Working independently.
Teamwork.
Work in an interdisciplinary environment.
Production of free, creative and induc
tive thinking.

3. SYLLABUS

1. Hematopoietic cell collection sources and techniques.
2. Types of transplants and transfusions.
3. Transfusion - Transplantation in special categories of patients.
4. Methodology for preparation of plasma derivatives(fractionation).
5. Indications for transplantation - transfusion.
6. Immune basis of graft rejection.
7. Clinical manifestations of graft rejection.
8. General immunosuppressive therapy.
9. Special immunosuppressive therapy.
10. Immunity to allografts.
11. Clinical transplantation - Laboratory test (A).
12. Clinical Transplantation - Laboratoty Test (B)
13. Treatment of diabetes by pancreas transplantation

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face lectures in the classroom.</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of ICT in teaching and laboratory training and use of e-mail and the website
of the Department for communication with students.
Use of the e-class for the posting and distribution of scientific articles, useful links, questionnaires, information for attending conferences and seminars related to the course, etc.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>120</td></tr>
<tr><td>Study and analysis of bibliography</td><td>60</td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Course total</td><td>180</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>Written final exams (100%) that includes:
- Long answer Questions
- Multiple Choice Test
- Short Answer Questions</td></tr>
</table>

5. SUGGESTED BIBLIOGRAGRAPHY

1. Rufo N, Garg AD, Agostinis P. The Unfolded Protein Response in Immunogenic Cell Death and Cancer Immunotherapy. Trends Cancer. 2017 Sep;3(9):643-658.
2. Mena E, Sanli Y, Marcus C, Subramaniam RM. Precision Medicine and PET/Computed Tomography in Melanoma. PET Clin. 2017*:* Oct;12(4):449-458.

Related academic journals

1. Alfaro C, Sanmamed MF, Rodríguez-Ruiz ME, Teijeira Á, Oñate C, González Á, Ponz M, Schalper KA, Pérez-Gracia JL, Melero I. Interleukin-8 in cancer pathogenesis, treatment and follow-up. Cancer Treat Rev. 2017 Aug 31;60:24-31

2. Mahmoudi M, Yu M, Serpooshan V, Wu JC, Langer R, Lee RT, Karp JM, Farokhzad OC. Multiscale technologies for treatment of ischemic cardiomyopathy. Nat Nanotechnol. 2017 Sep 6;12(9):845-855.

3. Siddique S, Risse J, Canaud G, Zuily S. Vascular Manifestations in Antiphospholipid Syndrome (APS): Is APS a Thrombophilia or a Vasculopathy? Curr Rheumatol Rep. 2017 Sep 4;19(10):64.

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	MEDICAL LABORATORIES		
COURSE CODE	8181	**SEMESTER**	8th
COURSE TITLE	TOXICOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
THEORETICAL LESSONS	3	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	http://www.teiath.gr/seyp/iatrika_ergastiria/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The student, after the end of the course, should:

● be familiar with the basic principles of toxicokinetic, toxicodynamic, clinical toxicology and analytical toxicology.

● understand the actions of environmental parameters that may constitute danger to plants, animals and humans.

●Know the toxicity of substances, metals and drugs and the way of poisoning treatment.

…….

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
At the end of this course the students will: ● assess the risks of potential household toxicity, professional and urban environment. ● Know the ways of intervention and effective treatment of poisonings, in every area of human activity. ● contribute to the scientific evaluation of the consequences, the treatment and risk management, human, business environment and ecosystem. ●contribute to the preventive protection of human health and preservation of natural environment.	

3. SYLLABUS

- Introduction. Principles of Toxicology. Subject and branches of toxicology.
- Categories and classification of toxic. Absorption, distribution and excretion of toxins substances, Toxicokinetic.
- Medicines (paracetamol, salicylates, benzodiazepines, barbiturates, tricyclics antidepressants)
- Drugs (cannabinoids, opiates, stimulants, hallucinogens)
- Doping categories. Anabolic steroids, diuretics, adrenergic agonists, hormones, stimulants, drugs. Laboratory check. Gene doping
- Pesticides. Toxic effects of pesticides. Residues of toxic compounds in food / water
- Veterinary medicines. Toxic effects of poisons and terrestrial toxins of animals.
- Toxic effects of plants, fungi and algae.
- Toxic effects of solvents and vapors (halogenated hydrocarbons, its monoxide carbon, carbon dioxide, hydrogen cyanide). Ethanol (pharmacokinetic, measurement in biological fluids and exhaled air, toxicity).
- Toxic effects of metals (heavy metals).
- Toxic effects of radiation and radioactive materials.
- Modern methods of analytical toxicology (immunochemistry, chromatography, Spectrophotometry).

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face teaching
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of ICT in teaching, Communication with students, Teaching through video, Collaboration between students – professors through short assays. Use the e-class for posting and circulation of scientific articles, instructions, lectures, useful links, questionnaires, information on attending conferences and seminars related to the course, etc.

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures-Presentations with use of audiovisual media.	120
Study & analysis of Bibliography	40
Educational Visits	20
Course total	*180*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Written final exam (100%) that includes:
Multiple Choice Test
Short Answer Questions

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.Selected Contemporary Topics in Toxicology. E. Tsoukali-Papadopoulou, Parisian, 2008

2. General Toxicology. Franz-Xaver Reichl, Paschalidis, 2004

3. Doping: A modern view of the problem. Athanaselis, ESKAN Publications, 2006

4. Toxicology. A. Koutselinis, Parisian, 2000

5. Forensic Medicine and Toxicology. P.Epivatianos, University Studio Press, 1988

6.Addictive substances, Pharmacology, Toxicology, History, Sociology, Legislation. Medical Library1, G. Dardanos, 1997

7. Basic Toxicology. Casarett and Doull. C.D.Klaassen, J.B.Watkins. Publications Parisian, 2015

8.Clinical Toxicology. Principles and Mechanisms. Barile F, CRC Press, 2004

9. Food and Nutritional Toxicology. Omaye S.T. CRC Press, 2004

10. Casarett and Doull's Toxicology, 6th Edition, 2001

- Related academic journals:

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8191	**SEMESTER**	8th
COURSE TITLE	UNDERGRADUATE THESIS (DISSERTATION)		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Study and research in collaboration with the supervising professor	4	12

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	CESE
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes
COURSE WEBSITE (URL)	Moodle.uniwa.gr

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, student is expected to be able to:

1. Describe and document the basic knowledge related to the topic of research
2. Summarize the existing scientific knowledge on the subject
3. Present and explain the basic procedures related to the topic of the research
4. Study and analyze the problem
5. Synthesize and process the survey data
6. Write and successfully support their thesis with extensive reference on the subject

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Search for, analysis and synthesis of data and information with the use of the necessary technology Production of new research ideas Working independently Showing social, professional and ethical responsibility and sensitivity to gender issues	

(3) **SYLLABUS**

The preparation of the thesis covers the 8th semester of studies of the Program.

The work is individual and has a strong research character, and elements of innovation.

Is supervised by a faculty member of the Department, on a subject chosen by the student with scientific interest.

The student is invited to:

1. know the existing knowledge and know-how, conducting bibliographic research
2. analyze issues in question
3. write and support orally publicly his scientific thought on the subject of the thesis

(4) **TEACHING and LEARNING METHODS - EVALUATION**

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face or other communication of the student with the supervising faculty member.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Laboratory education
Use of digital academic libraries and other sources of scientific references.</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Research work</td><td>200</td></tr>
<tr><td>Writing</td><td>100</td></tr>
<tr><td>Final presentation</td><td>160</td></tr>
<tr><td>Total workload</td><td>360</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>1. Correctness and validity of the content work (60%)
2. Adequacy of bibliographic references (20%)
3. Presentation (10%)
4. Innovative elements and research prospects (5%)
5. Correct use of the Greek Language (5%)</td></tr>
</table>

(5) ATTACHED BIBLIOGRAPHY

How to write the first research paper YALE Journal of biology and medicine 2011, pp.181-190

How to write a scientific thesis. https://doi.org/10.1016/j.earlhumdev.2018.07.012

Reflections on how to write and organize a research thesis. Nurse Researcher 2005, 13, 2

27
Pautasso M. Ten Simple Rules for Writing a Literature Review. PLOS Computational Biology 2013(9); e1003149
Grant M, et al. A typology of reviews: an analysis of 14 review types and associated methodologies. Health Information and Libraries Journal 2009 (26); 91–108.
Leite D, Soares MA, Cecatti J. Approaching literature review for academic purposes. CLINICS 2019;74:e1403

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	MEDICAL LABORATORIES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8201	**SEMESTER**	8th
COURSE TITLE	PLACEMENT		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Laboratory lessons		40	12
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialized		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek, English		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes		
COURSE WEBSITE (URL)	Moodle.uniwa.gr, bisc.practice.gr		

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students at the end of the lesson will be familiar with the:

- routine analytical procedures of clinical laboratories (hematological, biochemical, microbiological, blood bank, cytological, immunological, histopathological) and others.
- trends of modern clinical pathology,
- quality control of analytical methods and the quality control assessment of laboratories.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Search for, analysis and synthesis of data and information with the use of the necessary technology Production of new research ideas Working independently Working in an interdisciplinary environment Team work Showing social, professional and ethical responsibility and sensitivity to gender issues Working in an international environment Working in an interdisciplinary environment Production of new research ideas	

3. SYLLABUS

The practice takes place in a clinic laboratory or other biomedical laboratories of the public or private sector. It includes:

- Practice in biological samples taking (i.e. taking venous blood mainly with a syringe, or vacuum device, taking vaginal samples, test PAP samples).
- Practice in a biochemical laboratory (i.e. use of biochemical analyzers, immunochemical analyzers, centrifugations, samples' processing).
- Undergraduate Internship in a hematology laboratory (i.e. use of hematology analyzers, blood smear stains, ESR, microscopy of blood smears, analysis of coagulation factors, etc.).
- Practice in a microbiological laboratory (i.e. microbiological cultivations, preparation of culture medians, antibiograms, identification of bacteria, general tests of urine, feces, CSF and other biological fluids).
- Practice in a histopathological laboratory (i.e. embedding tissues, microtoming of paraffin blocks, histopathological staining, immunohistochemistry).
- Practice in a blood donation laboratory (i.e. blood sampling, blood bag handling, virological tests).
- Practice in a cytology laboratory (i.e. PAP staining, thin prep analyzes).
- Practice in an immunology-histocompatibility laboratory (i.e. determination of autoantibodies by indirect immunofluorescence, immunoenzymatic methods, immunoblotting, determination of HLA).
- Practice in a non-clinical laboratories (i.e. laboratory animals, criminology, toxicology, pharmacy, food-industries).
- Practice in research laboratories of public or private research institutions.

4. TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Laboratory education</td></tr>
<tr><td>USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>laboratory education</td></tr>
<tr><td>TEACHING METHODS
The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Practice</td><td>350</td></tr>
<tr><td>Presentation of laboratory protocols</td><td>50</td></tr>
<tr><td>Final exam</td><td>50</td></tr>
<tr><td>Total workload</td><td>450</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION
Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</td><td>The total grade of practice is estimated:
50% from the student’s trainee
50% from the student’s teacher supervisor</td></tr>
</table>

9.7 DivisionofDental Technology - Courses outline

9.7.1 4th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE (6)		
COURSE CODE	4011-4012	**SEMESTER**	4th
COURSE TITLE	DENTAL MORPHOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
LECTURES	3TH	**9**
LABORATORY	6 L	
TOTAL	**9**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CSBC - COMPULSORY SPECIFIC BACKGROUND COURSE
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT135/ https://ocp.teiath.gr/courses/DENT_UNDER102/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is to introduce students to the science of dental technology, through the learning and understanding of the role of morphological elements and characteristics of each of the teeth that form the dental barriers;

After the successful completion of the course, the students will be able to:

· To know the basic elements of the structure of teeth and periodontal tissues.

· To indicate the teeth present in the deciduous and permanent dentition, to describe the time of eruption of the permanent teeth, which permanent tooth rises in place of each decidine and name each tooth of permanent and decidant dentition in the FDI system.

· To recognize and describe the basic morphological characteristics of the teeth and analyze their role.

· To recognize the relationship between the form and function of the teeth.

· Describe the basic morphological differences of the permanent central-lateral upper incisor, the corresponding lower incisors, the upper-lower canines, the first-second upper and lower premolars as well as the first-second upper and lower molars.

· To identify each tooth and its characteristics, in whatever form it may encounter (sketch, effigy, natural).

· To recognize the wrong morphological elements of all teeth of permanent dentition.

· To describe the basic morphological differences of each permanent tooth.

· To render with wax, in plaster casts, the morphology of all surfaces on all permanent teeth.

· To describe and recognize the relationships of the anterothic and posterior teeth during central closure and during the functional movements of the lower jaw.

· Demonstrate that they understand the whole process of applying all the prior knowledge in dental technology.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Search for, analysis and synthesis of data and information,

with the use of the necessary technology

Decision-making

Criticism and self-criticism

Production of free, creative and inductive thinking

Respect for the natural environment

Working in an international environment

(3) SYLLABUS

Dental Morphology is a basic subject in the training of dental technologist and a prerequisite formally and substantially for their progress in their subsequent courses Curriculum. The course is taught theoretically and practically through a cycle of theoretical and laboratory courses. The theory and the laboratory go hand in hand in time as far as possible, so that students are taught theory and apply laboratory.

Theory:

The theoretical part of the course deals with the morphology of permanent teeth, their anatomical variations and the time of their eruption. As far as milk teeth are concerned, reference is made to their general morphological characteristics and mainly their differences with permanent teeth are highlighted.

The theoretical part, for practical and educational reasons, is offered through a cycle of 13 courses which are analyzed below:

1. General elements of dental barrier and teeth. Anatomical elements of the oral cavity.

2. Generally for teeth. Basic description of teeth, usefulness, categories of teeth, parts, surfaces and dimensions of a tooth.

3. Histology of teeth. Generation of permanent and declaruous teeth. Structure of teeth.

4. Nomenclature - Numbering of declarant and permanent teeth. A prerequisite for the proper cooperation of the Dental Technician with the Dentist is the common language of consultation, according to the international nomenclature and numbering of the individual Teeth.

5. Terminology of individual characteristics. Common features of teeth. Despite the large variation in the morphology of the teeth depending on their type, or between different individuals or breeds, there are certain features that are repeated. Knowledge of the terminology of individual structural characteristics is a basic educational need.

6. Times of eruption. The time of eruption of each tooth, decanter or permanent one varies. Of particular interest are the eruption times of the permanent teeth in the period of the mixed barrier. The involvement of the Dental Technician at this age is mainly during the construction of orthodontic machines.

7. Morphology of declaruous teeth. In this part there is a general presentation of declarant teeth, more in relation to the differences they present with permanent teeth. The purpose is to identify the type of teeth (deceiah or permanent) in a cast.

8. Central and lateral incisor of the upper jaw. Description of the morphology of the crown and the root of the central and lateral incisor of the upper jaw, emphasizing their particular characteristics.

9. Central and lateral incisor of the lower jaw. Description of the morphology of the crown and root of the central and lateral incisor of the lower jaw, emphasizing their particular characteristics.

10. Canine of upper and lower jaw. Description of the morphology of the crown and root of the canines of the upper and lower jaw, emphasizing their particular characteristics.

11. Premolars of the upper and lower jaw. Description of the morphology of the crown and root of the first and second premolars of the upper and lower jaw, emphasizing their special characteristics.

12. Molars of the upper and lower jaws. Description of the morphology of the crown and root of the first and second molar of the upper and lower jaw, emphasizing their special characteristics.

13. Morphological differences between the teeth of the upper and lower jaw and the right or left half molecule. The distinction of the teeth of the upper and lower jaw or left and right half-molecule, apart from its

practical importance, acquires particular interest from an educational point of view since it helps in the easier and deeper memorization by the student of the individual characteristics.

Laboratory:

Alongside the theoretical training, the student practices in the laboratory of dental morphology, creating all the teeth of the dental barrier in wax. In particular, students in laboratory exercises attribute, with the technique of waxing, to plaster casts, missing surfaces or parts of tooth crowns.

The laboratory exercises of the course are:

EXERCISE 1. General elements of dental barrier and teeth

EXERCISE 2. Morphological features of teeth

EXERCISE 3. Central incisor of the upper jaw.

EXERCISE 4. Lateral incisor of the upper jaw.

EXERCISE 5. Central and Lateral incisor of the lower jaw.

EXERCISE 6. Canine of the upper jaw.

EXERCISE 7. Canine of the lower jaw.

EXERCISE 8. First and second upper premolars

EXERCISE 9. First and second lower premolars

EXERCISE 10. First maxillary molar.

EXERCISE 11. First molar of the lower jaw.

EXERCISE 12. Second molars of the upper and lower jaw.

EXERCISE 13. Final practical laboratory evaluation on the content of exercises 1-12 (I)

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	*Face-to-face*	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	YES Use of electronic technology for the presentation of lectures in the classroom. View video. Connection to the e-class platform. Internet connection and viewing of educational videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures(hours/week): 3	
	Laboratory practice(hours/week): 6	
	Total hours per week9	*270*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	*Language of evaluation: Greek* *Final written exam including:* - *Development questions aimed at understanding the basics of the theory* - *Multiple-choice questions* - *Short answer questions for the purpose of bench marking theory elements* *Specifically-defined evaluation criteria are:* - *Check the written text by the student* - *The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.*

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1Γαλιατσάτος Α. Εγχειρίδιο Εργαστηριακών Ασκήσεων Οδοντικής Μορφολογίας. [ηλεκτρ. βιβλ.] Αθήνα 2015, Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: https://repository.kallipos.gr/handle/11419/969

2.Γαλιατσάτος ΑΑ, Σεμπέπου Ι. Εργαστηριακές σημειώσεις οδοντικής μορφολογίας, Σημειώσεις Τ.Ε.Ι., Αθήνα: 2010: 15-35.

3.Δουβίτσας Γ.Π.: Οδοντική μορφολογία και εισαγωγή στη σύγκλειση. 2η έκδοση. Αθήνα: Ελληνικά

4.Γράμματα; 1994: 103-114.

5.Κακάμπουρα Α, Ραχιώτης Χ, Βουγιουκλάκης Γ. Οδηγός εργαστηριακών ασκήσεων οδοντικής μορφολογίας και εισαγωγής στη σύγκλειση. Αθήνα: ΕκδόσειςΠασχαλίδη; 2011: 40-60.

6Celenza VF: Occlusal Morphology. Chicago: Quintessence Publ. Co; 1980: 50-110.

https://ocp.teiath.gr/modules/units/?course=DENT_UNDER102&id=1417.

7.Zeisz RC, Nuckolls J. Dental anatomy. The form and function of the permanent teeth and the form and function of the deciduous teeth. St. Louis: C.V. Mosby Co; 1949: 45-90.

8.Romerowski J, Bresson G. Anatomie Dentaire Functionnelle, relations statiques. Paris: Editions CDP; 1999: 80-130.

9.Van Beek CG. Dental morphology. An illustrated guide. 2nd ed. Bristol: Wright &Sons Ltd; 1983: 90-120.

10.Wheeler CR. Dental anatomy, Physiology and Occlusion. 5th ed. Philadelphia: W.B. Saunders Co; 1974: 120-140.

11.Wheeler CR. An atlas of tooth form. 4th ed. Philadelphia: W.B. Saunders Co; 1969: 95-130.

Related academic journals:

1.ΟδοντοστοματολογικήΠρόοδος

2.Στοματολογία

3.Journal of Aesthetic Dentistry

4.Journal of Prosthetic Dentistry

5.Journal of Dental Technology

6.International journal of prosthodontics

7.Quintessence of dental technology

8.Dental Material

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE (6)		
COURSE CODE	4021	**SEMESTER**	5th
COURSE TITLE	BIO MATERIALS OF DENTAL TECHNOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.Ifthecreditsareawardedforthewholeofthe course, give the weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
THEORETICAL COURSES	2	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background, special background,specialisedgeneral knowledge, skills development*	CSC - COMPULSORY SPECIALIZATION COURSE
PREREQUISITE COURSES:	INTRODUCTION TO BIO MATERIALS OF DENTAL TECHNOLOGY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	..

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will:

- Know the properties of the materials used in everyday lab practice
- Be able to choose the proper material for the right method
- Be able to apply properly the various fabrication techniques in accordance with the materials' specifications

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear

in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
- Independent practice - Working in full educated working groups - Decision making - Producing new research projects - Promoting free, creative and inductive thoughts - Ability to adjust in changing situations	

(3) SYLLABUS

THEORY

Waxes. Physicomechanical properties, types, uses, choice

Plasters and investments. Physicomechanical properties, types, uses, choice

Dental alloys, types, properties

Aesthetic polymer coatings

Ceramic materials – Dental Porcelain

Zirconium. Use

Biological Properties – Biocompatibility of Materials

Corrosion, basic principles and materials' behavior in oral environment

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning ,etc.*	In classroom

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Using modern teaching electronic methods and devices in the classroom. Connecting in the Internet and projection of teaching material and videos

TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Theoretical courses	
	Course total	*90*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Writing Examination 100% Writing test with short questions covering the whole course's content Check the test from the student

(5) ATTACHEDBIBLIOGRAPHY

- Suggested bibliography:

Greek

1.Καφούσιας Ν, Μπαλτζάκη Γ, Σταθόπουλος Απ. Οδοντιατρικά Βιοϋλικά.

Εκδόσεις Ακίδα. Αθήνα 1994

2.Σταθόπουλος Απ: Οδοντιατρικά Υλικά. Εκδόσεις Παρισιάνο. Αθήνα 1988

3.Θεοχάρης Π: Πειραματική αντοχή των υλικών. ΕκδόσειςΕΜΠ. Αθήνα 1988

English

1.Sakaguchi RL, Powers JM: Craig's Restorative Dental Materilas. 13th Ed Elsevier. Philadelphia 2012

2.Anusavice KJ: Philip's Science of Dental Materials. 11th Ed. Saunders. St Louis 2003

3.O'Brien WJ: Dental Materials and their selection. 4th ed. Quintessence Books 2008

- Related academic journals:

1.Dental Materials – Elsevier

2.Journal of Prosthetic Dentistry – Elsevier

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	(6) UNDERGRADUATE		
COURSE CODE	4031-4032	**SEMESTER**	4TH
COURSE TITLE	OCCLUSION		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLYT EACHING HOURS**	**CREDITS**
LECTURES	2	4
LABORATORY	2	
TOTAL	4	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skills development*	Compulsory Specialization Course (CSC)
PREREQUISITE COURSES:	PHYSIOLOGY OF THE STOMATOGNATHIC SYSTEM
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	..https://eclass.uniwa.gr/courses/DENT152/https://eclass.teiath.gr/courses/DENT103/

(2) LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon the completion of the course, students will be able to:

- Know the concept of occlusion, the types of occlusion found in the physiological dentition and the prevailing theories about the attribution of occlusal schemes to removable and fixed prosthetic restorations.
- Know the occlusal morphology and contacts, the relationships of the posterior and anterior teeth in the position of maximum intercuspation and during the functional movements of the lower jaw.
- Know and apply the techniques of creating/waxing up the occlusal surfaces.
- Know the use of mechanical articulators.

The aim of the course is to introduce the students to the basic principles of physiological dental occlusion, to familiarize them with the techniques of functional occlusion waxing so that they are able to use them in the continuation of their training in the construction of prosthetic restorations.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Group work • Decision making • Work in an interdisciplinary environment • Critical and self-critical search, • Analysis and synthesis of data and information, using the necessary technologies	

(3) SYLLABUS

THEORY

The course is taught theoretically and practically through a cycle of theoretical and laboratory courses. The theory and the laboratory go hand in hand as far as possible, so that students are taught theory and apply it in the lab.

- Basic Lower Jaw Positions: Basic positions of the lower jaw are analyzed, such as the Central Relationship, the Rest position, the Position of Maximum intercuspation and the Position of Central Occlusion. Reference is made to the importance of these positions as construction sites for a prosthetic restoration, or positions of diagnostic value. The extreme positions of the lower jaw in the protrusive and lateral movements are also described.
- Kinesiology of the lower jaw: In this section are analyzed the movements of the lower jaw and condyles in the three planes, horizontal, sagittal and frontal. The movements of the lower jaw, protrusion & lateral (Bennet movement) are analyzed thoroughly.
- Extensive reference to the mechanical analogues of the movements of the lower jaw, the "articulators".
- Theories of ideal and physiological occlusion - Types of Occlusion.
- Occlusal relationships: The occlusal contacts of the posterior and anterior teeth in the intercuspal position and during the functional movements of the lower jaw are described and analyzed. Extensive reference is made to the occlusive morphology of the posterior teeth. The factors that affect the occlusal morphology of the teeth in a horizontal and vertical plane are thoroughly analyzed. Detailed analysis of the occlusal relations of the anterior and posterior teeth of Class I in static and dynamic occlusion. Occlusal terminology.
- Techniques for the creation of occlusal surfaces. The techniques of Thomás and Payne Linden for the creation of occlusal surfaces in fixed prosthetic work are described and analyzed

extensively

LABORATORY: In parallel with the theoretical training, the student practices in the laboratory creating the teeth of the dentition in wax.

The laboratory exercises of the course are:

EXERCISE 1. Construction of casts.

EXERCISE 2. Articulators – Mounting the casts on the articulator.

EXERCISE 3. Functional waxing up of an occlusal surface.

EXERCISE 4. Waxing - First maxillary molar.

EXERCISE 5. Waxing - First molar of the lower jaw.

EXERCISE 6. Waxing - Central incisor of the upper jaw.

EXERCISE 7. Waxing - Lateral incisor of the upper jaw.

EXERCISE 8. Waxing - Central and lateral incisor of the lower jaw.

EXERCISE 9. Waxing - Canine upper jaw.

EXERCISE10. Waxing - Canine lower jaw.

EXERCISE 11. Waxing - First premolar of the lower jaw

EXERCISE 12. Waxing - Second molars of the upper and lower jaws.

EXERCISE 13. Final practical laboratory evaluation on the content of exercises 1-12

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	*Face-to-face,*	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	• Use of ICT in teaching • Projective system and presentation ability with the implementation of the Power Point Program. • Using search engines bibliography HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR. • Use of e-mail and the Department's website for communication and information of students respectively. • Viewing educational videos. • Support of learning process through the electronic platform e-class.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	
	Lab	
	Coursetotal	*150*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written final exam (60%) which includes: • Multiple choice questions, • Short Answer Questions • Development questions, • Questions of judgment, understanding of the theory and evaluation of thinking. Students, when given the topics, are informed about how to evaluate each group of topics, depending on their degree of difficulty and take into account the completeness of the answer, the clarity, the degree of critical thinking of the student and the language proficiency. The theory is examined in the final examination, while in case of individual or group work, the grade of the latter participates in up to 20% in the formation of the degree of the theory. Practical evaluation in the laboratory (40%) on the content of all laboratory exercises • Control of written by the student • Evaluation of students in the laboratory by at least two teachers and calculation of the average grade The course is evaluated at the end of the semester, through the internal process

(5) ATTACHEDBIBLIOGRAPHY

C- Suggested bibliography:

GREEK:

1. Δρούκας Β.: Λειτουργία και δυσλειτουργία του στοματογναθικού συστήματος. 3η έκδοση. Επιστημονικές Εκδόσεις Παρισιάνου. Αθήνα 2008.

2. Ανδριτσάκης Π.Δ.: Ακίνητη Επανορθωτική Οδοντιατρική. Οδοντιατρικές εκδόσεις Σπ. Ζαχαρόπουλος. Αθήνα 2008.

3. Wassell R, Naru A, Steele J, Nohl F. (Μετάφραση: Γαρέφης Π): Σύγκλειση. Από τη θεωρία στην καθημερινή οδοντιατρική πράξη. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2010.

4. Rosenstiel FS., Land MF., Fujimoto J. (Μετάφραση: Κοΐδης Π. Θ): Σύγχρονη ακίνητη προσθετική. Οδοντιατρικές Εκδόσεις Μπονισέλ. Αθήνα 2012.

5. Γαρέφης Π.: Ακίνητη Προσθετική. Λειτουργία και αισθητική στις μεταλλοκεραμικές και ολοκεραμικές αποκαταστάσεις. Κλινικές διαδικασίες. Συνεργασία με το οδοντοτεχνικό εργαστήριο. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2013.

6. Τσόλκα Π. Φυσιολογία Στοματογναθικού Συστήματος - Συγκλεισιολογία. Ενότητες 1-12. Έκδοση: 1.0. Αθήνα 2014. Διαθέσιμοαπότηδικτυακήδιεύθυνση: www.opencourses.gr

ENGLISH:

1. Wheeler R.: Dental anatomy, physiology and occlusion. WB Saunders Co. Philadelphia, London, Toronto, 1974.

2. Thomson H.: Occlusion. Wright. London 1990.

3. ShillingburgHT, WilsonEL., MorrisonJT.: GuidetoOcclusalWaxing. 3rded. QuintessencePublishingCo. Ltd. Chicago 2000.

4. Kano P. Challenging Nature. Wax-Up Techniques in Aesthetics and Functional Occlusion. Quintessence Publishing Co. Ltd. London 2011.

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	**6** (Undergraduate)		
COURSE CODE	**4041-4042**	**COURSE SEMESTER**	**Fourth**
COURSE TITLE	**REMOVABLE PROSTHODONTICS I**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	4	**10**
Laboratory	9	
TOTAL	**13**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Compulsory Specialization Course(CSC)
PREREQUISITE COURSES:	INTRODUCTION TO BIO MATERIALS OF DENTAL TECHNOLOGY, PHYSIOLOGY OF THE STOMATOGNATHIC SYSTEM
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://dentech.bisc.uniwa.gr/course/kiniti-prosthetiki-i/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

After the end of the course students will be able to:

• know theoretically and practically the stages of construction and repair of complete dentures.
• know theoretically and practically the stages of construction of immediate complete dentures.
• know modern methods of making complete dentures (the digital denture).
• know, choose and use modern materials and construction methods.
• know the stages of their own competence and how to work harmoniously with the Dentist.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Working independently
- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

(3) SYLLABUS

The course is taught theoretically and practically through a series of theoretical and laboratory courses. Theory classes keep pace with lab work so that students can apply what they learn in theory.

Theory

1. Developmental stages of complete dentures: they constitute a prerequisite for understanding contemporary views on their fabrication.

2. Essentials of Anatomy and Physiology of the Stomatognathic System related to the function of complete dentures.

3. Factors related to the function of complete dentures.

4. Materials for the fabrication of complete denture bases: scientific knowledge of the physicomechanical properties of each material used in a denture fabrication helps in choosing the proper material for the appropriate method.

5. Antisepsis-Disinfection: taking the necessary preventive measures for the transmission of infectious diseases from the laboratory to the dentist, the patient, the dental assistant and vice versa is a contemporary requirement.

6. Complete denture: students learn the complete denture fabrication steps.

7. Complete dentures repairs: each product is considered successful, if it can be repaired or improved.

8. Immediate dentures: students learn about modern restoration techniques in cases of total edentulism, as required by an era with high aesthetic standards.

9. Case studies

10. Methods of manufacturing complete dentures digitally with CAD / CAM technology.

11. "Flexible" materials for the construction of a complete denture.

Lab

1. Laboratory techniques and the fabrication steps of a complete denture.

2. Repairs of complete dentures.

3. Immediate denture fabrication.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance*	In lecture hall. Undergraduate Internship in the laboratories of the division of Dental

<table>
<tr><td>learning, etc.</td><td>Technology.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of I.C.T. in Teaching for the slide show screen and course presentation. Use of e-mail, Web page of the Division and e-class platform for the students communication, correspondence and notification.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures. Contributions and Lectures with the use of audiovisual tools. Use of open e-class for the posting and handling of e-book (https://eclass.teiath.gr/modules/document/?course=DENT112), scientific articles, instructions, lectures, useful websites (links), questionnaires, exercises, etc.</td><td></td></tr>
<tr><td>Laboratory practice, field exercise, in small groups of 20-25 students.</td><td></td></tr>
<tr><td>Course total</td><td>300</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written</td><td>Theory; written examination (60%)

Laboratory practice; laboratory evaluation (40%)</td></tr>
</table>

work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Student writing test is free for inspection by the student itself Assessment in the laboratory by at least two teachers and calculation of the average

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

(Greek)

1. Γιαννικάκης Σ: Εργαστήριο ολικών οδοντοστοιχιών. 2018 Ηλεκτρονικό βιβλίο: https://eclass.teiath.gr/modules/document/?course=DENT112

2. Δημητρίου Π, Ζήση Α, Καρκαζή Η, Πολυζώη Γ, Σταυράκη Γ: Κινητή Προσθετική. Ολικές Οδοντοστοιχίες. 4η έκδοση. Εκδόσεις Μπονισέλ. Αθήνα 2001

3.ΒλησίδηςΔ: Οδοντοπροσθετική Ι (ολικές οδοντοστοιχίες). Εκδόσεις Λίτσας, Αθήνα 1982

4. Οικονόμου ΠΝ: Άμεσες ολικές οδοντοστοιχίες. Ζήτα. Αθήνα 1988.

(Foreign)

1. Geering AH, Kundert M, Kelsey CC: Complete denture and overdenture prosthetics. Thieme Medical Publ Inc. NewYork 1993

2. Muraoka H. Complete denture fabrication. Quintessence Publ. Co. Osaka Japan 1989

3. Hayakawa I. Principles and practices of complete dentures: creating the mental image of a denture. Quintessence Pub., Tokyo 2001

Related academic journals:

Journal of Prosthetic Dentistry

International Journal of Prosthodontics

European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	4051	**SEMESTER**	4
	PRINCIPLES OF BUSINESS ADMINISTRATION AND LABORATORY ORGANIZATION		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	2	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CSEBC – Compulsory Elective Specific Background Course
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT123/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the basic principles of organization and management of a business and in particular, a dental laboratory.

Upon successful completion of the course the student should:

• Understand the concept of organization and management and understand their usefulness in modern business.

• Understand the meaning and function of business planning and the site selection process

• Know how to organize and equip a dental laboratory

• Understand the operation of the operating expenses budget and accounting

• Understand the function of staff supervision and the existence of proper interpersonal relationships and, all this, within the framework of the legislation governing the profession.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Search, analysis and synthesis of data and information, using the necessary technologies • Teamwork • Critical thinking and self-reflection • Project design and management	

(3) SYLLABUS

The theory is divided into thematic sections for educational and practical reasons

These sections are:

1. Introduction to Business Management - Historical review, definition and utility. Business and environment, distinction of business-economic units.

2. Business Planning- The Benefits of Planning- The Barriers Between Business and Planning - The Start for Planning.

3. Organization and factors of production. The "labor" factor. The capital. Raw materials for production.

4. Production planning. Budget and control of operating expenses. Quality Assurance.

5. Management and supervision of staff. Content. Procedure for recruiting staff through the Manpower Employment Organization (OAED). Elements of labor law and legislation governing the profession.

6. Control. The function and usefulness of Control within the company.

7. Marketing. Definition, necessity and contribution. The customers and their needs. The product. Definition and description of "target customer". Choice of the site location.

8. Pricing. Promotion. Sales- Advertising- Public Relations.

9. Interpersonal relationships and communication.

10. Quality assurance systems. Quality Assurance System: ISO 9000. Conditions and advantages in the installation of a Quality Assurance System. Certification: stages, time and cost. The role of consultants.

11. Elements of accounting and tax legislation. Businesses that keep B category books. Keeping a book of Income- Expenses.

12. Determination of the net profits of the B category of books. Separation of sales by net profit margin. Separation of sales by value added tax rate (VAT). Income tax return of the B category books of the Books and Records Code (K.V.S.)

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	In-class face-to-face lectures	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	1. Support of the learning process through the electronic platform e-class 2. Use of internet to demonstrate case studies	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	
	Teamwork in a case study (analysis and commentary on case studies)	
	Teamwork in a case study (market research)	
	Independent Study	
	Course total	*90*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	1. Written final exam (60%) which includes: • Multiple choice questions • Short answer questions aiming at the comparative evaluation of theory elements 2. Practical skills assessment (20%) which includes analysis and commentary of case studies 3. Practical skills assessment (20%) which includes reporting and presentation of market research results.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography (Greek Editions):

- Tzortzaki K., Tzortzaki A.: Organization and Business Administration, (Individual edition), Athens 1992
- Kanellopoulou, Ch.: Management-Effective Management, (Individual edition), Athens 1990
- Chytiris, L.: *Organizational Behavior*, Interbooks publications, Athens 1996
- Kanellopoulou Ch.: Small and Medium Enterprise Management and Entrepreneurship, (Individual edition), Athens 1994

- Suggested bibliography (English Editions):

- Bateman/Snell: *Building Competitive Advantage*,1996
- Griffin R.: *Fundamentals of Management, Core Concepts and Applications*, USA 1997
- Bartol M. & Martin DVI: Management, USA, 1994

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	4052	**SEMESTER**	4
COURSE TITLE	PRINCIPLES OF MARKETING		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	2	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CESBC -Compulsory Elective Specific Background Course
PREREQUISITE COURSES:	-
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT106/

(2) LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Principles of Marketing is the basic introductory course in the concepts of marketing, a key function of the management structure of a company, which contributes decisively to the efficiency and effectiveness of the company in the modern dynamic environment.
The aim of this course is for the student to gain a comprehensive understanding of marketing processes, methodologies and techniques, such as the role of marketing in strategic business planning and strategic marketing planning, marketing research, consumer and buyer behavior, segmentation-targeting-positioning, marketing mix decisions concerning product, pricing, distribution and promotion, as well as specific areas of marketing such as industrial marketing, service marketing, banking marketing, international marketing.
Upon successful completion of the course the student should:
1. Explain the basic functions of marketing and describe how they are integrated into the

business value chain
2. Recognize key elements of marketing strategy
3. Distinguish and explain the different strategies used for different markets
4. Recognize the elements of the marketing environment and explain how to make decisions
5. Explain the dimensions of the marketing mix and analyze the role they play in marketing planning in order to control demand
6. Demonstrate that (s)he understands the whole marketing process in relation to the ethical issues that arise and the ability to propose appropriate measures
7. Analyze and evaluate a marketing plan of an existing product or service and organize and conduct a market research, and present its findings in writing and orally, through participation and collaboration with fellow students in small groups.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

• Search, analysis and synthesis of data and information, using the necessary technologies

• Teamwork

• Critical thinking and Critical thinking and self-reflection

• Project design and management

(3) SYLLABUS

Introduction to the concept and philosophy of marketing

The marketing environment

Basic concepts of consumer and buyer behavior

Market research and marketing information systems

Market segmentation, evaluation of market segment attractiveness

Target market selection, product placement in the target market

Marketing strategy and marketing mix

Product policy and product life cycle

Product portfolio management

Pricing policy

Distribution policy - distribution channels

Promotion policy - advertising and sales promotion

Promotion policy - public relations, publicity and sales

Feedback on teamwork in marketing research

Reflection on the learning outcomes and exam preparation

(4) TEACHINGandLEARNINGMETHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning,etc.*	In-class face-to-face lectures	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	1. Support of the learning process through the electronic platform e-class 2. Use of internet to demonstrate case studies	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed in detail.* *Lectures, seminars, laboratory practice, fieldwork, studyandanalysisofbibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	
	Teamwork in a case study (analysis and commentary on case studies)	
	Teamwork in a case study (market research)	
	Independent Study	
	Course total	*90*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	1. Written final exam (60%) which includes: • Multiple choice questions • Short answer questions aiming at the comparative evaluation of theory elements 2. Practical skills assessment (20%) which includes analysis and commentary of case studies 3. Practical skills assessment (20%) which includes reporting and presentation of market research results.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography (Greek Editions):

- Armstrong, G. and Kotler, P. (2009). *Introduction to Marketing*, Epikentro (9th ed.). ISBN: 9789604582014
- Kazazis, N. (2006). *Effective marketing for profitable sales*, Ed. Stamouli SA. ISBN: 9603516600
- Paschaloudis, D. (2009). *Marketing: What you need to know and have not asked*, Ed. Kritiki, ISBN: 9789602186428
- Tomaras, P. (2009). Introduction to Marketing and Market Research, Ed. Idiotiki (4thed.). ISBN: 9609067409

- Related academic journals:

- Journal of Marketing
- Journal of Marketing Research
- European Journal of Marketing
- Journal of Academy of Marketing Science
- Journal of Marketing Management
- Journal of Services Marketing
- Industrial Marketing Management

9.7.2 5th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	5011-5012	**SEMESTER**	5st
COURSE TITLE	FIXED PROSTHODONTICS I		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
		12 (3TH+9 LAB)	10
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SC/C SPECIALIZATION COURSE/COMPULSORY		
PREREQUISITE COURSES:	DENTAL MORPHOLOGY AND OCCLUSION		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT130/ https://ocp.teiath.gr/courses/DENT_UNDER100/		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to acquire the necessary scientific and applied knowledge that will enable them to design and construct fixed dental prostheses of individual teeth, according to modern opinions and materials;
Upon successful completion of the course, students will be able to:

- know the purposes, the goals and the necessity of the application of the fixed dental prostheses.
- acquire and understand the scientific knowledge that determines the basic principles of dental prosthetics.
- familiarize themselves with the current data of dental technology and biomaterials.
- distinguish and recognize the various individual fixed prosthetic structures (inlays, onlays, crowns, partial crowns, veneer crowns, cast.
- use the various devices required for the completion of an individual fixed prosthetic construction.
- get to know and understand, theoretically and practically, the construction stages of individual fixed prosthetic structures.
- know, select and use modern materials and construction methods.
- demonstrate that they understand the whole process of applying all previous knowledge in dental technology.
- acquire the necessary skills for their professional protection and competitiveness.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Search for, analysis and synthesis of data and information, with the use of the necessary technology Decision-making Criticism and self-criticism Production of free, creative and inductive thinking Respect for the natural environment Working in an international environment Showing social, professional and ethical responsibility and sensitivity to gender issues	

(3) SYLLABUS

Theory

Basic principles and methods of fabricating fixed dental prostheses. Types and conditions.

The cas. Types of casts. Casts with removable dies. Fabrication techniques.

Fabrication process of metal castings in fixed prosthetics.

Fabrication techniques and steps of cast works such as complete crowns, partial crowns, inlays and onlays, porcelain fused to metal crowns, telescopic crowns, and dowel crowns.

Jacket crowns. Material selection and handling.

Case studies.

Lab

Fabrication of casts with removable dies, die shaping and mounting on the articulator.

Wax pattern formation for inlays, partial crowns, full coverage veneer crowns.

Spruing, investing, dewaxing and preheating and casting.

Framework processing, finishing, polishing and fitting.

Fabrication of the veneer, full cast crown, acrylic resin crown.

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	*Face-to-face*
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communication with students*	YES Use of electronic technology for the presentation of lectures in the classroom. View video. Connection to the e-class platform. Internet connection and viewing of educational videos.

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Lectures(hours/week): 3	
Laboratory practice(hours/week): 9	
Total hours per week 12	*300*

STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

Language of evaluation: Greek

Written final exam (60%) which includes:
- Development questions aimed at understanding the basics of the theory
- Multiple-choice questions
- Short answer questions for the purpose of bench marking theory elements

Practical evaluation in the laboratory (40%) on the content of all laboratory exercises, which includes
- Multiple-choice questions
- Laboratory work

- Check the written text by the student
- Evaluation of students in the laboratory by at least two teachers and calculation of the average grade
- The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.Αντωνόπουλος Α., Σύγχρονη Ακίνητη Προσθετική, Εκδόσεις Συμμετρία, Αθήνα1993

2.Γονίδης Δ., Οδηγός Ασκήσεων Εργαστηρίου Ακίνητης Προσθετικής Εκδόσεις Μπονισέλ

3.Δημητροπούλου Ε., Η εργαστηριακή διαδικασία στην Ακίνητη Προσθετική. Έκδοση ιδίας, Αθήνα 2004

4.Λομβαρδάς Γ., Προσθετική, Εκδόσεις Μέλισσα 1987

5.Γαλιατσάτος Α. Οδηγός εργαστηριακών ασκήσεων Ακίνητης Προσθετικής Ι. Δωρεάν Ηλεκτρονικό Βοήθημα / Σημειώσεις. Έκδοση: 1η/2015 Κωδικός Βιβλίου στον Εύδοξο: 55612585.

6.Γαλιατσάτος Α.Α. Μελέτη του μηχανισμού συγκόλλησης πολυμερών επικαλύψεων σε κράματα που χρησιμοποιούνται στην ακίνητη προσθετική. Διδακτορικήδιατριβή, Αθήνα, 1995.

5.Jonston F., Phillips W., Dykema W., Modern Practice in Crown and Bridge Prosthodontics Εκδόσεις W.B.Saunders Co, Philadelphia 1971

6.Miller L., Esthetic Guidelines for Restorative Dentistry, Εκδόσεις Quintessence 1980

7.Shillinbourg T., Hobo S., Whitsett D., Fundamentals of Fixed Prosthodontics, Εκδόσεις Quintessence 1981

8.Tylman S., Malone W., Θεωρία και Πράξη της Ακίνητης Προσθετικής (ελληνική μετάφραση) Εκδόσεις Μπονισέλ 1978

- Related academic journals:

1.Οδοντοστοματολογική Πρόοδος

2.Στοματολογία

3.Journal of Esthetic Dentistry

4.Journal of Prosthetic Dentistry

5.Journal of Dental Technology

6.International journal of prosthodontics

7.Quintessence of dental technology

8.Dental Material

9.European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	5021-5022	**SEMESTER**	5TH
COURSE TITLE	ORTHODONTICS I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
THEORY (T)	2 (T)	7
LABORATORY (L)	2 (L)	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SPECIALIZATION, REQUIRED
PREREQUISITE COURSES:	DENTAL TECHNOLOGY BIOMATERIALS II, DENTAL MORPHOLOGY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon competition of the course students will:

- Get familiar with the basic principles of orthodontic technology
- Understand the material properties and uses of orthodontic wires and clasps
- Gain basic knowledge about the development of the dental, alveolar and facial complex
- Get familiar with the basic orthodontic wire bending techniques
- Be able to make orthodontic study casts
- Be able to construct orthodontic springs
- Have the necessary knowledge about orthodontic screws and springs.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

- Working independently
- Teamwork
- Decision making
- Respect for the natural environment by making the right choice of the orthodontic materials
- Enhance the co-work of Orthodontist and Orthodontic Dental Technician
- Search, analysis and synthesis of data in the use of the right tools and materials for the laboratory work

(3) SYLLABUS

Theory

General Part

1. Historical Overview. The science of orthodontics through the ages. Reference to scientists that contributed to the development of orthodontics.
2. Postembryonic development of the craniofacial complex, focusing the upper and lower jaw development.
3. Basic orthodontic instruments and materials used in the construction of orthodontic appliances.
4. Basic techniques of orthodontic appliances construction
5. Orthodontic study casts
6. Diagnostic measurements on orthodontic casts
7. Orthodontic appliances: classification in removable, fixed and mixed orthodontic appliances. Parts, properties, advantages and disadvantages.

Special Part

1. Orthodontic springs and screws. Their application in the construction of orthodontic appliances.
2. Orthodontic clasps: classification, choice of the proper anchorage, characteristics, design and construction of various orthodontic clasps. Construction of Adams, Schwarz, Jackson, Schneemann, triangular and ball end retainer clasps.
3. Orthodontic Hawley retainer: indication of use, step by step construction and modifications.
1. Case studies

Lab

1. Ergonomic working at the laboratory bench
2. Orthodontic Wire bending techniques
3. Construction of geometric shapes with orthodontic wires
4. Construction of orthodontic springs

5.	Construction of orthodontic clasps (Adams)

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face in Class learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Support of the learning process through the MS Teams, Video Presentation
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** — ***Semester workload*** Lectures — 30 Laboratory practice (in Class) — 30 Personal study — 40 Laboratory practice (at Home) — 80 Course total — *180*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Language of evaluation Greek Methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, oral examination, laboratory work.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. Μαρκοστάμου Κ.: Εισαγωγή στην εργαστηριακή ορθοδοντική. Εκδόσεις Σταμούλης, Αθήνα 2000.
2. Σπυροπούλου Μ.: Εργαστηριακά μαθήματα Ορθοδοντικής, Αθήνα 1982.
3. Σπυροπούλου Μ. Ν.: Μορφογένεση και αύξηση του κρανιοπροσωπικού συμπλέγματος. Αθήνα 1983.
4. Σπυροπούλου Μ.: Βασικές αρχές ορθοδοντικής. Τόμος πρώτος. Εκδόσεις Λίτσας, Αθήνα 1990.
5. Σπυροπούλου Μ.: Βασικές αρχές ορθοδοντικής. Τόμος Δεύτερος. Β' Έκδοση. Εκδόσεις Βήτα, Αθήνα 2004.
6. Tenti F.: Άτλας ορθοδοντικών εφαρμογών. Μετάφραση: Κ. Μαρκοστάμος. Εκδόσεις Μπονισέλ, Αθήνα 1990.
7. EustaquioA. Araujo&PeterH. Buschang ΟΡΘΟΔΟΝΤΙΚΗ Διάγνωση και θεραπεία Αναπτυσσόμενων Ανωμαλιών Σύγκλεισης Επιστημονική επιμέλεια Ελένη Βασταρδή, Δημήτριος Κωνσταντώνης
8. Χαλαζωνίτης Δ.: Θεωρητικά στοιχεία ορθοδοντικής εμβιομηχανικής, Εκδόσεις Δ. Χαλαζωνίτης, 2000-2007.

9. Μπουλούχου Ο.: Σημειώσεις Ορθοδοντικής, ΤΕΙ Αθήνας
10. Ηλιάδης Θ., Ζηνέλης Σ.: Βιολογικά υλικά. Εισαγωγή στη μηχανική των ιστών.
11. Πολυχρόνης Γ. Εργαστηριακός Οδηγός Ορθοδοντικής Ι Σημειώσεις Ορθοδοντικής Επιστημονική επιμέλεια Κωνσταντίνος Παναγιωτής

Foreign:

12. Enlow D.H.: Facial growth. 3rd edition. W.B. Saunders Company, 1990.
13. Graber T. M., Neumann B.: Removable Orthodontic appliances. W.B.Saunders Company, Philadelphia, London, Toronto, 1977.
14. Graber T., Swain B.: Orthodontics, current principles and techniques. CV Mosby Co., St. Louis 1985.
15. Kahl-Nieke B: Einführung in die Kieferorthopädie. 2.Auflage. Urban & Fischer Verlag, München, Jena, 2001.
16. MoyersR.E.: Handbook of Orthodontics. Year Book Medical Publischers, Chidago 1988.
17. Orthodontic Aligner Treatment: A Review of Materials, Clinical Management and Evidence. THEODORE ELIADES & ATHANASIOS E. ATHANASIOU Stuttgart- New York – Delhi- Rio de Janeiro: Thieme, 2021; 1st edition ISBN: 978-3132411487, 225 pages, hard back
18. Wirtz, U.: O-Atlas, Atlas of orthodontic and orofacial orthopedic technique, Dentaurum 2007
19. Papadopoulos M., Orthodontic Treatment of the class II noncompliant patient (Book), Mosby Elsevier 2006
20. Eliades G, Eliades T., Brantley., Watts.: Dental Materials in Vivo. Aging and related Phenomena, Quintessence books, 2003
21. Scuzzo G, Takemoto K., Lombardo L. : Orthodontic Setup, Quintessenza Edizioni, 2014

- Related academic journals:

1. Hellenic Orthodontic Journal
2. American Journal of Orthodontics and Dentofacial Orthopedics
3. Angle Orthodontist
4. European Journal of Orthodontics
5. Journal of Clinical Orthodontics
6. Journal of Orofacial Orthopedics (Fortschritte der Kieferorthopaedie)

Journal of Orthodontics (formal, British Journal of Orthodontics)

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	5031-5032	**COURSE SEMESTER**	Fifth
COURSE TITLE	REMOVABLE PROSTHODONTICS II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	3	**10**
Laboratory	9	
TOTAL	**12**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specialization Course/Compulsory (SC/C)
PREREQUISITE COURSES:	REMOVABLE PROSTHODONTICS I
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://dentech.bisc.uniwa.gr/course/kiniti-prosthetiki-ii/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will:

- know the principles of partial denture design and fabrication using a cast metal framework.
- Know how to use the survey for a proper study and design of various partial dentures.
- know how to use the various appliances required for the completion of a partial denture with a cast framework.
- Know, in theory and in practice, the fabrication steps of a partial denture.
- know how to select and use modern materials and fabrication techniques.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
Decision-making	*Respect for the natural environment*
Working independently	*Showing social, professional and ethical responsibility and sensitivity to gender issues*
Team work	*Criticism and self-criticism*
Working in an international environment	*Production of free, creative and inductive thinking*
Working in an interdisciplinary environment	*……*
Production of new research ideas	*Others…*
	…….

- Working independently
- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary

technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

(3) SYLLABUS

The course includes a series of theoretical and laboratory classes, so that students make application of what they learn in theory.

Theory

- Elements of anatomy and physiology of the stomatognathic system related to application of partial dentures.
- Engineering principles of partial denture design.
- Principles of partial denture design. Use of a surveyor. Greatest circumference. Path of insertion.
- Case studies.
- Kennedy's classification.
- Support, retention, stability. Rotation axes. Major, minor connectors, bars.
- Types of clasps, rests.
- Alloys. Properties, selection. Refractory Investments, properties, selection.
- Casting procedure. Metal framework processing.
- Tooth selection. Set up. Resins.
- Repair methods of both the metal part and the acrylic part of a partial denture (saddles – artificial teeth).
- Case studies
- Digital Removable Partial Denture fabrication workflow.

Lab

- Fabrication of a custom tray.
- Fabrication of a master cast.
- Study and design of a partial denture.
- Elimination of undercuts, copy of the master cast in investment form. Fabrication of a wax pattern, casting, processing, finishing and polishing of the metal framework.
- Wax rims, mounting on the articulator, artificial tooth set up, flasking, polymerization, finishing and polishing of the plastic parts.
- Repair methods and techniques for different partial denture parts.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In lecture hall. Undergraduate Internship in the laboratories of the division of Dental Technology.
USE OF INFORMATION AND COMMUNICATIONS	Use of I.C.T. in Teaching for the slide show screen and course presentation. Use of e-mail, Web page of the Division and e-class platform for the students communication, correspondence and

TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students

notification.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures. Contributions and Lectures with the use of audiovisual tools. Use of open e-class for the posting and handling of e-book (https://eclass.teiath.gr/modules/document/?course=DENT112), scientific articles, instructions, lectures, useful websites (links), questionnaires, exercises, etc.	
Laboratory practice, field exercise, in small groups of 20-25 students.	
Course total	***300***

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral

Theory; written examination (60%)

Laboratory practice; laboratory evaluation (40%)

examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Student writing test is free for inspection by the student itself Assessment in the laboratory by at least two teachers and calculation of the average

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

- Related academic journals:

(Greek)

1. Προμπονάς Α, Βλησίδης Δ,. Μερικές οδοντοστοιχίες: σύγχρονες εργαστηριακές τεχνικές κατασκευής. Ιατρικές εκδόσεις Πασχαλίδης. Αθήνα 2011
2. Αζαριά Χ., Μερικές Οδοντοστοιχίες, Θεσσαλονίκη 1994
3. Βλησίδη Δ. Οδοντοπροσθετική Ι (Μερικές Οδοντοστοιχίες). Εκδόσεις Λίτσας 1982.
4. Δημητρίου Π και συν. Κινητή Προσθετική- Μερικές Οδοντοστοιχίες, Εκδόσεις Μπονισέλ, Αθήνα 1996.

(Foreign)

1. Renner P R., Boucher L. Partial Dentures. Quintessence Pub.Co. New York, 1987.

2. Rudd K D, Morrow RM, Eissmann HF. Dental Laboratory Procedures. Removable Partial Dentures. MosbyCo, StLouis 1981.

Related academic journals:

Journal of Prosthetic Dentistry
International Journal of Prosthodontics
European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	5041	**SEMESTER**	5TH
COURSE TITLE	ORAL AND LABORATORY HYGIENE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	2 (T)	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SBC/C SPECIFIC BACKGROUND COURSE/ COMPULSORY
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The subject 'Oral and Laboratory Hygiene' is divided into two separate parts. Part 1: Oral Hygiene and Part 2: Dental Laboratory Hygiene.

In Part 1 students will be familiarized with the ways and means of oral hygiene cavity prevention and therapy. Regarding lab hygiene, the students learn about the risks they are exposed to due to the patient, dentist, dental assistant and dental technician chain. Moreover, they learn about the ways and means, at their disposal, for preventing the spread of contagious and infectious diseases

Upon successful completion of the course, students will be in a position to:

- Explain what dental caries and periodontitis is as well as their role in the health of teeth and periodontal tissues
- Recognize and explain what dental microbial plaque and tartar is as well as their relationship with everyday diet.
- Recognize and describe the basic methods and ways to prevent tooth decay
- Understand and utilize contemporary oral hygiene means: toothbrush, dental floss, interdental brushes etc.
- Know and discern the relationship between the morphology of the prostheses they fabricate and the oral hygiene as well as how the dental technician contributes to and facilitates the maintenance of the patients' oral health
- Analyze and assess the adoption of the right techniques – ways or means to prevent the spread of infectious diseases in their working space
- Understand and recognize the means of transmission of infectious diseases within the patient- dentist-assistant- dental technician cycle.

- Organize their laboratory space properly so as to not allow the appearance of or effectively prevent cross-infection
- Demonstrate that they understand the overall procedure of applying the aforementioned knowledge to Dental Technology

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

- Working independently
- Team work
- Decision-making
- Working in an interdisciplinary environment
- Search, analysis and synthesis of data and information with the use of necessary technology

(3) SYLLABUS

The course is offered through a cycle of 13 theoretical lectures:

1. Introduction to elements of anatomy related to the oral cavity.
2. Caries, Periodontitis, the most frequent diseases due to bad oral hygiene.
3. Dental microbial plaque: formation, its relationship to healthy nutrition and the daily oral hygiene routine.
4. Fluorine: intake and its action against caries.
5. Modern means of oral cavity care, toothbrush, dental floss, interdental brushes, etc. Daily oral hygiene and its importance to the success and longevity of prosthetic restorations.
6. Prosthetic restorations morphology and oral hygiene. The ways in which the dental technician contributes to oral hygiene maintenance.
7. Control of infectious diseases transmission from patient to the dentist, from dentist to the dental technology lab and vice versa.
8. Risks due to cross-infection between patients, dentists, assistants and dental technicians. Ways and means to prevent transmission of infectious diseases.
9. Harmful factors within the dental technology work space. Biological – chemical – physical – ergonomic.
10. Biological danger factors within the dental technology work space. Health implications, transmission routes, symptoms, general and personal precautionary protective measures.
11. Disinfection of impressions and prosthetic restorations. Disinfectants: specifications, timing, effects on the physicomechanical properties of materials and prosthetic restorations.
12. Physical and chemical danger factors within the dental technology work space. Health implications,

transmission routes, symptoms, general and personal precautionary protective measures.

13. Ergonomic danger factors within the dental technology work space. Health implications, transmission routes, symptoms, general and personal precautionary protective measures. Suggested preventive protocol for dealing with the harmful factors within the dental technology work space.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning ,etc.*	Face-to-face lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Electronic technology use for the lectures' presentations projection. Video projection. Connection with the E-class platform. Internet connection to project educational videos.

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Lectures	90 hours
Course total	*90*

STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

Written final examination that includes:

- Essay type questions to demonstrate the understanding of the basic theoretical elements taught
- Multiple choice questions
- Short answer questions to demonstrate the critical evaluation of the theoretical elements taught
- Students are able to review their written paper
- This subject is assessed on completion of the semester through the departmental internal assessment procedure applied on all subjects

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. Αποστολόπουλου Α: Μαθήματα Προληπτικής Οδοντιατρικής. Εκ. Λίτσας Αθήνα 1984
2. Λάσκαρης Γ, Τζούτζας Ι. Κίνδυνοι και μέτρα πρόληψης στο οδοντιατρείο. Εκδόσεις Βήτα, ΚΕΕΛ 1994
3. Τριχόπουλου Α. Τριχόπουλου Δ., Σωστή Διατροφή και Πρόληψη Οδοντικής Τερηδόνας. Προληπτική Ιατρική. Εκ. Παρισιάνος Αθήνα 1986
4. Χατζόπουλου Π.: Αγωγή Στοματικής Υγείας, Εκδ. Χατζόπουλος Παναγιώτης Αθήνα 1988

International:

1. Murray J.: Prevention of oral disease. 3rd ed. Oxford University Press, New York 1995.
2. Norman H., Arden Ch.: Primary preventive dentistry. 4th ed. Appleton & Lange, Norwalk 1995.

- Related academic journals:

1. *Οδοντοστοματολογική Πρόοδος*
2. *Στοματολογία*

3. *Journal of Esthetic Dentistry*
4. *Journal of Prosthetic Dentistry*
5. *Journal of Dental Technology*
6. *International Journal of Prosthodontics*
7. *Quintessence of Dental Technology*
8. *Dental Materials*

9.7.3 6th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6011-6012	**SEMESTER**	6st
COURSE TITLE	FIXED PROSTHODONTICS II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	2	**9**
LAB	7	
TOTAL	**9**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC/C SPECIALIZATION COURSE/COMPULSORY
PREREQUISITE COURSES:	FIXED PROSTHODONTICS I
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT134/ https://ocp.teiath.gr/courses/DENT_UNDER103/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to acquire the necessary scientific and applied knowledge that will enable them to design and construct fixed dental tooth prostheses and specifically various types of fixed bridges, according to modern views and materials;

Upon successful completion of the course, students will be able to:

- know the purposes, the objectives and the necessity of the application of the fixed dental prostheses and specifically the fixed bridges.
- understand the necessity of restoring the oral cavity by applying a bridge.
- acquire the scientific knowledge that determines the basic principles of the construction of a bridge.
- understand and analyze the rules of drawing bridges, both of an anterior tooth bridge and a posterior tooth bridge.
- distinguish and recognize the different types of fixed bridges (total metal bridge, total cast bridge with façade, telescopic bridge).
- distinguish and recognize the different parts of the fixed bridges.
- familiarize themselves with the current data of dental technology and biomaterials.
- Use the various devices required to complete a fixed bridge.
- get to know and understand, theoretically and practically, the construction stages of fixed prosthetic structures.

- know, select and use modern materials and construction methods.
- know methods of building bridges with the digital technology CAD-CAM.
- demonstrate that they understand the whole process of applying all previous knowledge in dental technology.
- acquire the necessary skills for their professional protection and competitiveness.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information,
with the use of the necessary technology
Decision-making
Criticism and self-criticism
Production of free, creative and inductive thinking
Respect for the natural environment
Working in an international environment
Showing social, professional and ethical responsibility and
sensitivity to gender issues

(3) SYLLABUS

Theory

Structure of dental bridges. Conditions, indications and contra-indications. The parts of a dental bridge. Abutment, retainer, pontic. Basic principles of design. Types of bridges.

Alloys. Selection and use.

Welding. Materials and methods.

Fixed prostheses, without metal framework. Composite resins, fortified polymers. Aesthetic coatings, materials and methods.

Temporary prostheses.

Lab

Lab exercises include:

Fabrication of casts with removable stumps, cutting and preparation of stumps, mounting on the articulator.

Fabrication of a single-piece cast full-metal bridge. Fabrication of full-metal bridge by soldering its parts. Manufacture of caster, metal framework with labial veneering.

Telescopic bridge.

Veneering of the metal framework of bridges with their mopolymerizing resins and light curing resins, with silica bonding method.

Fabrication of anterior bridge without metal framework. Fabrication of labial veneers inlays and crowns using fortified polymers.

Case studies.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning ,etc.*	*Face-to-face*	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	YES Use of electronic technology for the presentation of lectures in the classroom. View video. Connection to the e-class platform. Internet connection and viewing of educational videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures(hours/week): 2	
	Laboratory practice(hours/week): 7	
	Total hours per week 9	*270*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions, open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	*Language of evaluation: Greek* Written final exam (60%) which includes: · Development questions aimed at understanding the basics of the theory · Multiple-choice questions · Short answer questions for the purpose of bench marking theory elements Practical evaluation in the laboratory (40%) on the content of all laboratory exercises, which includes · Multiple-choice questions · Laboratory work · Check the written text by the student · Evaluation of students in the laboratory by at least two teachers and calculation of the average grade · The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Dimitropoulou E. The laboratory procedure in Fixed Prosthodontics. Self edition. Athens 2004

2. Antonopoulos A, Contemporary Fixed Prosthodontics. Ed. Symmetria Athens 1993

3. Gonidis D. Guide of exercises in Fixed Prosthodontics's Laboratory. Ed. Bonissel

4. Γαλιατσάτος Α.Α. Μελέτη του μηχανισμού συγκόλλησης πολυμερών επικαλύψεων σε κράματα που χρησιμοποιούνται στην ακίνητη προσθετική. Διδακτορικήδιατριβή, Αθήνα, 1995.

5. Lomvardas G. Prosthetics, Ed. Melissa 1987

6. Shillinbourg T., Hobo S., Whitsett D., Fundamentals of Fixed Prosthodontics, Εκδόσεις Quintessence 1981

7. Miller L., Esthetic Guidelines for Restorative Dentistry, Εκδόσεις Quintessence 1980

8. Tylman S., Malone W., Θεωρία και Πράξη της Ακίνητης Προσθετικής (ελληνική μετάφραση) Εκδόσεις Μπονισέλ 1978

9. Jonston F., Phillips W., Dykema W., Modern Practice in Crown and Bridge Prosthodontics Εκδόσεις W.B.Saunders Co, Philadelphia 1971

Related academic journals:

1.ΟδοντοστοματολογικήΠρόοδος

2.Στοματολογία

3.Journal of Esthetic Dentistry

4.Journal of Prosthetic Dentistry

5.Journal of Dental Technology

6.International journal of prosthodontics

7.Quintessence of dental technology

8.Dental Material

9.European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	6021-6022	**SEMESTER**	6TH
COURSE TITLE	ORTHODONTICS II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
THEORY (T)	2 (T)	5
LABORATORY (L)	2 (L)	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SPECIALIZATION, REQUIRED
PREREQUISITE COURSES:	ORTHODONTICS I
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon competition of the course students will:

- acquire the necessary scientific and applied knowledge, which will enable them to fabricate simple orthodontic appliances. Schwarz Plate, Hawley Plate, lingual/palatal arches, rapid palatal expander etc.
- Understand the material properties and uses of orthodontic acrylics and their effects on humans and environment.
- Be able to construct orthodontic clasps and arches
- Fabricate orthodontic plates with screws
- Be able to use simple orthodontic laboratory appliances

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others…

- Working independently
- Teamwork
- Decision making
- Respect for the natural environment by making the right choice of the orthodontic materials
- Enhance the co-work of Orthodontist and Orthodontic Dental Technician
- Search, analysis and synthesis of data in the use of the right tools and materials for the laboratory work

(3) SYLLABUS

Theory

1. Orthodontic Acrylics, Historical Overview, materials, properties, advantages, disadvantages and environmental impact.
2. Palatal and lingual arches (Nance, Goshgarian, Quad Helix). Step by step construction and their modifications.
3. Rapid palatal expander. Function, step by step construction and their modifications.
4. Space maintenance fixed and removable appliances.
5. Orthodontic wire soldering techniques.
6. Active orthodontic plates, step by step construction and modifications. (Schwartz Plate, distalisation plate, regaining space plate)
7. Passive orthodontic Plates step by step construction and modifications (Retainers, Hawley retainer)
8. Orthodontic appliances to prevent/inhibit bad habits. Use, indications. Function. Step by step construction and their modifications.
9. Functional orthodontic appliances. Principles of function, description, step by step construction. Modifications of functional appliances such as Activator, Bionator, Fränkel, and Delaire mask, Crozat and Twin Block.
10. Repair of orthodontic appliances.
11. Bite planes: function and step by step construction.

Lab

1. Fabrication of labial arches.
2. Construction of various orthodontic clasps. Construction of Adams, Schwarz, Jackson, Schneemann, triangular and ball end retainer clasps

3. Fabrication of a Hawley retainer with jackscrew fitting for expansion and acrylic plate.
4. Palatal and lingual arches (Nance, Goshgarian, Quad Helix). Step by step construction and their modifications.
5. Rapid palatal expander. Function, step by step construction and their modifications.
6. Space maintenance fixed appliances. Step by step construction by soldering orthodontic wire.
7. Construction of simple thermoplastic splint retainer

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face in Class learning	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Support of the learning process through the MS Teams, Video Presentation	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	30
	Laboratory practice (in Class)	30
	Personal study	40
	Laboratory practice (at Home)	80
	Course total	*180*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Language of evaluation Greek Methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, oral examination, laboratory work.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. Μαρκοστάμου Κ.: Εισαγωγή στην εργαστηριακή ορθοδοντική. Εκδόσεις Σταμούλης, Αθήνα 2000.
2. Σπυροπούλου Μ.: Εργαστηριακά μαθήματα Ορθοδοντικής, Αθήνα 1982.
3. Σπυροπούλου Μ. Ν.: Μορφογένεση και αύξηση του κρανιοπροσωπικού συμπλέγματος. Αθήνα 1983.
4. Σπυροπούλου Μ.: Βασικές αρχές ορθοδοντικής. Τόμος πρώτος. Εκδόσεις Λίτσας, Αθήνα 1990.
5. Σπυροπούλου Μ.: Βασικές αρχές ορθοδοντικής. Τόμος Δεύτερος. Β' Έκδοση. Εκδόσεις Βήτα, Αθήνα 2004.

6. Tenti F.: Άτλας ορθοδοντικών εφαρμογών. Μετάφραση: Κ. Μαρκοστάμος. Εκδόσεις Μπονισέλ, Αθήνα 1990.
7. EustaquioA. Araujo&PeterH. Buschang ΟΡΘΟΔΟΝΤΙΚΗ Διάγνωση και θεραπεία Αναπτυσσόμενων Ανωμαλιών Σύγκλεισης Επιστημονική επιμέλεια Ελένη Βασταρδή, Δημήτριος Κωνσταντώνης
8. Χαλαζωνίτης Δ.: Θεωρητικά στοιχεία ορθοδοντικής εμβιομηχανικής, Εκδόσεις Δ. Χαλαζωνίτης, 2000-2007.
9. Μπουλούχου Ο.: Σημειώσεις Ορθοδοντικής, ΤΕΙ Αθήνας
10. Ηλιάδης Θ., Ζηνέλης Σ.: Βιολογικά υλικά. Εισαγωγή στη μηχανική των ιστών.
11. Πολυχρόνης Γ. Εργαστηριακός Οδηγός Ορθοδοντικής Ι Σημειώσεις Ορθοδοντικής Επιστημονική επιμέλεια Κωνσταντίνος Παναγιωτής

Foreign:

12. Enlow D.H.: Facial growth. 3rd edition. W.B. Saunders Company, 1990.
13. Graber T. M., Neumann B.: Removable Orthodontic appliances. W.B.Saunders Company, Philadelphia, London, Toronto, 1977.
14. Graber T., Swain B.: Orthodontics, current principles and techniques. CV Mosby Co., St. Louis 1985.
15. Kahl-Nieke B: Einführung in die Kieferorthopädie. 2.Auflage. Urban & Fischer Verlag, München, Jena, 2001.
16. MoyersR.E.: Handbook of Orthodontics. Year Book Medical Publischers, Chidago 1988.
17. Orthodontic Aligner Treatment: A Review of Materials, Clinical Management and Evidence. THEODORE ELIADES & ATHANASIOS E. ATHANASIOU Stuttgart - New York – Delhi - Rio de Janeiro: Thieme, 2021; 1st edition ISBN: 978-3132411487, 225 pages, hard back
18. Wirtz, U. : O-Atlas, Atlas of orthodontic and orofacial orthopedic technique, Dentaurum 2007
19. Papadopoulos M., Orthodontic Treatment of the class II noncompliant patient (Book), Mosby Elsevier 2006
20. Eliades G, Eliades T., Brantley., Watts.: Dental Materials in Vivo. Aging and related Phenomena, Quintessence books, 2003
21. Scuzzo G, Takemoto K., Lombardo L. : Orthodontic Setup, Quintessenza Edizioni, 2014

- Related academic journals:

1. Hellenic Orthodontic Journal
2. American Journal of Orthodontics and Dentofacial Orthopedics
3. Angle Orthodontist
4. European Journal of Orthodontics
5. Journal of Clinical Orthodontics
6. Journal of Orofacial Orthopedics (Fortschritte der Kieferorthopaedie)

Journal of Orthodontics (formal, British Journal of Orthodontics)

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	6031-6032	**SEMESTER**	6TH
COURSE TITLE	DENTAL CERAMICS I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
LECTURES – LABORATORY EXERCISES	2 (T)	**9**
	7 (L)	
TOTAL	**9**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skills development*	SC/C SPECIALIZATION COURSE/COMPULSORY
PREREQUISITE COURSES:	FIXED PROSTHODONTICS I, BIOMATERIALS OF DENTAL TECHNOLOGY II
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, the students will:

- be aware of the necessity for oral rehabilitation utilizing a fixed prosthesis (crown-bridge).
- know, theoretically and in practice, the fabrication steps of metal-ceramic restorations.
- know which steps are their own responsibility and how to cooperate harmoniously with the dentist.
- know the variations of modern metal-ceramic restorations that constitute part of the everyday dental technology procedure.
- have acquired the necessary qualifications for establishing their professional rights and competitiveness.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Working independently • Team work • Decision-making • Working in an interdisciplinary environment • Criticism and self-criticism • Adapting to new situations • Search, analysis and synthesis of data and information with the use of necessary technology	

(3) SYLLABUS

Theoretical teaching

The course syllabus includes both theoretical and laboratory teaching. The theoretical teaching and the laboratory exercises are timely coordinated to the best possible extent in order for the students to be receiving the theoretical teaching prior to applying the acquired knowledge in the lab.

The course syllabus consists of the following sections:

Introduction – dental porcelain (in general) – dental ceramic prostheses terminology – the parts of a metal-ceramic restoration – laboratory steps for metal ceramic restorations fabrication (in general).

Dental porcelain: composition, physical and mechanical properties, advantages, disadvantages, porcelains classification.

Metal ceramicalloys. Titanium, alloy selection criteria, metal-ceramic bond

Study cast, Removable dies working model. Crown and bridge wax modelling.

Metal-ceramic framework design principles, mechanical behavior of metal-ceramic prostheses in the mouth, basic design principles.

Single metal-ceramic crowns design, multi-unit design (bridges-splints).

Sprueing, Investing, wax burn-out, preheating, casting.

Metal framework processing and completion (cleaning, casting defects), oxidation, metal-ceramic bond failures.

Porcelain layering- firing: Tools, materials and methods

Porcelain staining and glazing, aesthetics, metal framework polishing and finishing.

Titanium porcelains, equipment, methods.

Case studies

Laboratory exercises

Production of removable dies working models, die sectioning and preparation, articulator mounting.

Wax up modeling of a bridge and a crown framework, sprueing, investing, wax burnout, preheating, casting. Divesting, metal framework preparation, oxidation.

Porcelain layering and firing: consecutive application of ceramic material layers (opaque – dentin- enamel), condensation, porcelain maturation.

Porcelain staining and glazing, aesthetics, polishing and finishing of the metal framework.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face-to-face lectures and laboratory exercises	
USE OF INFORMATION AND COMMUNICATION STECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Electronic technology use for the lectures' presentations projection. Video projection. Connection with the E-class platform. Educational videos projection for every laboratory exercise. Interactive teaching.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	
	Laboratory practice	
	Interactive teaching	
	Course total	*240*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-defined evaluation criteria areg iven, and if and where they are accessible to students.*	Written final examination (60%) that includes: • Essay type questions to demonstrate the understanding of the basic theoretical elements taught • Multiple choice questions • Short answer questions to demonstrate the critical evaluation of the theoretical elements taught Practical assessment in the lab (40%) based on all the laboratory tasks' content that includes: • Multiple choice questions • Laboratory exercise • Students are able to review their written paper • The laboratory assessment of the students is performed by at least two members of the teaching staff so as to calculate the average assessment marks • This subject is assessed on completion of the semester through the departmental internal assessment procedure applied on all subjects

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. *Σπυρόπουλος Κ. Εκπαιδευτική Εργαστηριακή Μεταλλοκεραμική. Εκδόσεις Μπονισέλ. 2015*
2. *Ανδριτσάκη Δ.Π. Ολοκεραμικές αισθητικές αποκαταστάσεις. Εκδόσεις Αδάμ, Αθήνα, 1994.*
3. *Καφούσια Ν., Μπαλτζάκη Γ., Σταθόπουλου Α. Οδοντιατρικά βιουλικά. Εκδόσεις ακίδα, Αθήνα, 1994.*
4. *Ανδριτσάκη Δ.Π. Ακίνητη επανορθωτική οδοντιατρική. Εκδόσεις Ζαχαρόπουλος, Αθήνα, 2002.*
5. *Αντωνόπουλου Α. Σύγχρονη ακίνητη προσθετική. Εκδόσεις Συμμετρία, Αθήνα , 1993*

International:

5. *Shillinburg HT, Hobo S, Whitsett LD, Jacobi R, Brackett ES. Fundamentals of fixed prosthodontics. Quintessence Publishing, Chicago, 1997.*
6. *Mc Lean W. The science and art of dental ceramics. Quintessence Publishing, Chicago, 1980.*
7. *Kuwata M. Theory and practice for ceramo-metal restorations. Quintessence Publishing, Chicago, 1979.*

- Related academic journals:

1. *Οδοντοστοματολογική Πρόοδος*
2. *Στοματολογία*
3. *Journal of Esthetic Dentistry*
4. *Journal of Prosthetic Dentistry*
5. *Journal of Dental Technology*
6. *International Journal of Prosthodontics*
7. *Quintessence of Dental Technology*
8. *Dental Materials*
9. European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	6041-6042	**SEMESTER**	6th
COURSE TITLE	REMOVABLE PROSTHODONTICS III		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	7
Laboratory	5	
TOTAL	**8**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC/C Specialization Course/Compulsory
PREREQUISITE COURSES:	Removable Prosthodontics I, Removable Prosthodontics II
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will:

- know the variations or modifications of a complete denture so that it functions in each environment.
- know the materials and techniques used in these specialized prostheses.
- fabricate over dentures and copy dentures.
- use modern materials and techniques in combination with the conventional acrylic resin such as soft liners or base reinforcement with various reinforcing materials and techniques.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Decision making	

(3) SYLLABUS

SUBJECT DESCRIPTION

The course is divided into theory and laboratory classes. Laboratory classes follow theory classes, as far as possible, so that students put into practice what they learn in theory.

Theory

1. Conventional complete dentures and over dentures and copy dentures. Comparison, similarities, differences, advantages-disadvantages.

2. Essentials of Anatomy and Physiology of the Stomatognathic System related to the function, the practical meaning and very often the necessity for the fabrication of this type of prostheses.

3. Retention elements-Precision attachments used in over dentures.

4. Technology provides the lab with a variety of materials that give solutions to everyday problems of modern prosthetics. Soft lining materials can be applied in a high percentage of patients who cannot stand contact of the hard and unyielding denture base with the mucous membrane. Essentials of chemistry and physico-mechanical properties of soft lining materials. Scientific knowledge of the physico-mechanical properties helps in selecting the best and most appropriate material and technique.

5. Denture base reinforcement. Material selection.

6. Case study.

Lab

1. Over dentures: Laboratory process – Fabrication steps.

2. Copy dentures: Laboratory process. Fabrication steps. Copy, or copy and improvement of some elements of a denture are frequent cases in everyday clinical and laboratory practice.

3. Soft liners. Laboratory process- Fabrication steps.

4. Denture base reinforcement. Laboratory process of incorporating reinforcing materials. Metals, glass fibers, high-impact resins.

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In the classroom and in the laboratory
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of the lessons in the room. Connect to the internet and view instructional videos.
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** / ***Semester workload***
	Lectures: 70
	Laboratory exercise: 140
	Course total: *210*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written examination (60%) Laboratory evaluation (40%) • Written check by the student • Evaluation of students in the laboratory by at least two teachers and calculation of the average grade • The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) ATTACHEDBIBLIOGRAPHY

- Suggested bibliography:

1. Γιαννικάκη Σ: Ολικές Οδοντοστοιχίες. Εργαστήριο. Εκδόσεις Μπονισέλ. Αθήνα 2003.
2. Δημητρίου Π, Ζήση Α, Καρκαζή Η, Πολυζώη Γ, Σταυράκη Γ: Κινητή Προσθετική. Ολικές Οδοντοστοιχίες. 4η έκδοση. Εκδόσεις Μπονισέλ. Αθήνα 2001.
3. Βλησίδη Δ, Προμπονάς Α : Οδοντοπροσθετική IV (συμβατικές, άμεσες, ενδιάμεσες, επένθετες). ΕκδόσειςΛίτσας, Αθήνα 2001.
4. Geering AH, KundertM, Kelsey CC: Complete denture and overdenture prosthetics. Thieme Medical Publ Inc. NewYork 1993.
5. Hayakawa I. Principles and practices of complete dentures: creating the mental image of a denture. Quintessence Pub. Tokyo 2001.
6. Preiskel HW. Overdentures Made Easy: a guide to implant and root supported prostheses. Quintessence Pub. London 1996.

- Related academic journals:

1. ΕλληνικάΣτοματολογικάΧρονικά
2. ΟδοντοστοματολογικήΠρόοδος
3. Στοματολογία
4. Journal of Advanced Prosthodontics
5. ournal of Prosthodontic Research
6. Journal of Prosthetic Dentistry
7. Journal of Dental Technology
8. International Journal of Prosthodontics
9. Quintessence of dental technology
10. Dental Material
11. Dentistry
12. Journal of Oral Rehabilitation

9.7.4 7th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7011- 7012	**SEMESTER**	7TH
COURSE TITLE	DENTAL CERAMICS II		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises,etc.Ifthecreditsareawardedforthewhole of the course,givethe weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES		3 (T)	**8**
LABORATORY EXERCISES		6 (L)	
TOTAL		**9**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	SC/C SPECIALIZATION COURSE/COMPULSORY		
PREREQUISITE COURSES:	FIXED PROSTHODONTICS II, DENTAL CERAMICS I, BIO MATERIALS OF DENTAL TECHNOLOGY II		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE(URL)			

(2) LEARNING OUTCOMES

Learning outcomes
The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. *Consult Appendix A* • *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area* • *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B* • *Guidelines for writing Learning Outcomes*
The course aims to the acquisition of the necessary scientific and applied knowledge which will enable students to design and fabricate fixed dental prostheses and in particular a variety of fixed all-ceramic restorations in accordance with the current scientific trends and materials. Upon completion of the course, students will: • know the contemporary all-ceramic systems and their use • know the fabrication steps of the most widespread contemporary all-ceramic restorations in both theory and practice. • know which steps are of their own responsibility and how to cooperate harmoniously with the dentist. • know all the variations of the contemporary all-ceramic restorations that are currently part of the everyday dental technology practice.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Working independently • Team work • Decision-making • Working in an interdisciplinary environment • Criticism and self-criticism • Adapting to new situations • Search, analysis and synthesis of data and information with the use of necessary technology	

(3) SYLLABUS

The course syllabus includes both theoretical and laboratory teaching.

Theoretical teaching

The course syllabus consists of the following sections:

Introduction to all-ceramic systems, historical review

All-ceramic systems advantages, disadvantages, indications and contra-indications

All-ceramic systems' categories: reinforced internal core systems, cast and glass-ceramic systems, simple all-ceramic systems

The In-Ceram technique: indications, contra-indications, advantages, disadvantages

The In-Ceram technique: description of the all-ceramic crown and bridge fabrication techniques

The IPS-Empress technique: indications, contra-indications, advantages, disadvantages

The IPS-Empress technique: description of the all-ceramic crown and bridge fabrication techniques

All-ceramic inlays and onlays: inlay categories, advantages, disadvantages, indications and contra-indications

All-ceramic anterior veneers: advantages, disadvantages, indications and contra-indications

Laboratory stages for the fabrication of all-ceramic feldspathic veneers (refractory investment technique)

Newer all-ceramic systems: Celey – In Ceram, Procera etc.

All-ceramic systems assessment

Electroforming- Galvanoceramics: materials, techniques

Case studies

Laboratory exercises

1. All-ceramic crown fabrication using the InCeram technique: constructing a working cast, duplication of the working cast, mixing and production of the slip, application of the slip to the dies, core construction, fusion, infiltration, glass excess removal, layering and glazing a crown.

2. All-ceramic crown fabrication using the IPS-Empress technique: construction of a working cast with removable dies, die waxing, positioning in the pressing ring, investing, wax-burnout, heat pressing in the special device, cast cleaning, crown layering, final glazing.

3. All-ceramic inlay fabrication using the Vita technique or the simple technique.

4. All-ceramic anterior veneers fabrication using the refractory investment technique.

5. All-ceramic restorations fabrication using the CAD-CAM system.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures and laboratory exercises	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Electronic technology use for the lectures' presentations projection. Video projection. Connection with the E-class platform. Educational videos projection for every laboratory exercise. Interactive teaching.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	
	Laboratory practice	
	Interactive teaching	
	Course total	*240*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written final examination (60%) that includes: • Essay type questions to demonstrate the understanding of the basic theoretical elements taught • Multiple choice questions • Shortanswerquestions to demonstrate the critical evaluation of the theoretical elements taught Practical assessment in the lab (40%) based on all the laboratory tasks' content that includes: • Multiple choice questions • Laboratory exercise • Students are able to review their written paper • The laboratory assessment of the students is performed by at least two members of the teaching staff so as to calculate the average assessment marks • This subject is assessed on completion of the semester through the departmental internal assessment procedure applied on all subjects

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. *Σπυρόπουλος Κ. Εκπαιδευτική Εργαστηριακή Μεταλλοκεραμική. Εκδόσεις Μπονισέλ. 2015*
2. *Ανδριτσάκη Δ.Π. Ολοκεραμικές αισθητικές αποκαταστάσεις. Εκδόσεις Αδάμ, Αθήνα, 1994.*
3. *Καφούσια Ν., Μπαλτζάκη Γ., Σταθόπουλου Α. Οδοντιατρικά βιουλικά. Εκδόσεις ακίδα, Αθήνα, 1994.*
4. *Ανδριτσάκη Δ.Π. Ακίνητη επανορθωτική οδοντιατρική. Εκδόσεις Ζαχαρόπουλος, Αθήνα, 2002.*
5. *Αντωνόπουλου Α. Σύγχρονη ακίνητη προσθετική. Εκδόσεις Συμμετρία, Αθήνα , 1993*

International:

6. *Shillinburg HT, Hobo S, Whitsett LD, Jacobi R, Brackett ES. Fundamentals of fixed prosthodontics. Quintessence Publishing, Chicago, 1997.*
7. *Mc Lean W. The science and art of dental ceramics. Quintessence Publishing, Chicago, 1980.*
8. *Kuwata M. Theory and practice for ceramo-metal restorations. Quintessence Publishing, Chicago, 1979.*

- Related academic journals:

1. *Οδοντοστοματολογική Πρόοδος*
2. *Στοματολογία*
3. *Journal of Esthetic Dentistry*
4. *Journal of Prosthetic Dentistry*
5. *Journal of Dental Technology*
6. *International Journal of Prosthodontics*
7. *Quintessence of Dental Technology*
8. *Dental Materials*
9. European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	**7021-7022**	**SEMESTER**	**7th**
COURSE TITLE	COMBINED PROSTHODONTICS- PRECISION ATTACHMENTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	**8**
Laboratory	6	
TOTAL	**9**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC/C/ Specialization Course/Compulsory
PREREQUISITE COURSES:	Fixed Prosthodontics II, Removable Prosthodontics II
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will:

- know the meaning and usefulness of precision attachments and how they can connect fixed to removable prostheses.
- know the theoretical bases and application techniques of precision attachments.
- be able to apply prefabricated and laboratory-fabricated precision attachments.
- be able to study and analyze casts so they can fabricate a fixed or removable prosthesis that will be retained by a precision attachment

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Decision making	

(3) SYLLABUS

SUBJECT DESCRIPTION

The course is divided into theory and laboratory classes. Laboratory classes follow theory classes, as far as possible, so that students put into practice what they learn in theory.

SUBJECT DESCRIPTION

Theory

For educational reasons, the course is divided into a General Part and a Special Part.

The General Part includes the topics of precision attachment classification, advantages and disadvantages, indications and contra-indications, connecting precision attachments to fixed prosthesis, tools and instruments used in the application of precision attachments, various views on the problem of partial dentures with free ends.

The Special Part refers to the classification of prefabricated precision attachments and their application. More specifically, to the intracoronal, extracoronal, stud, bar and auxiliary attachments.

Case study.

Lab

Put theory into practice. More specifically, with the use of maxillary casts , students learn the following procedures:

1. Creating wax patterns for fixed prostheses, placement of precision attachments.

2. Milling of fixed prostheses using a dental surveyor. This stage also includes milling of wax patterns for reception of attachments.

3. Casting, polishing and finishing of fixed prostheses.

4. Study and design of the metal framework of a partial denture.

5. Study and design of a fixed prosthesis.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning,etc.*	In the classroom and in the laboratory	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of the lessons in the room. Connect to the internet and view instructional videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	90
	Laboratory exercise	150
	Course total	*240*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written examination (60%) Laboratory evaluation (40%) • Written check by the student • Evaluation of students in the laboratory by at least two teachers and calculation of the average grade • The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Προμπονάς Α, Βλησίδη Δ. Μερικές οδοντοστοιχίες Σύγχρονες εργαστηριακές τεχνικές κατασκευής. 1η Έκδοση. Αθήνα, 2011.
2. Προμπονάς Α. Συνδυασμένη προσθετική: σύνδεσμοι ακριβείας - τηλεσκοπικά συστήματα, 2015. http://hdl.handle.net/11419/2876
3. PreiskelHW. Overdenture made easy. A guide to implant and root supported prostheses. 1st ed .London: Quintessence Publishing Co, 1996. Σελ.45-170.
4. Jumber JF. An atlas of overdentures and attachments.1st ed. Chicago: Quintessence Publishing Co, 1981. Σελ. 99-238.
5. Preiskel HW. Precision attachments in dentistry. 2nd ed. St. Louis: CV Mosby Co. 1973. Σελ. 22-171.

- Related academic journals:

1. Ελληνικά Στοματολογικά Χρονικά
2. Οδοντοστοματολογική Πρόοδος
3. Στοματολογία
4. Journal of Advanced Prosthodontics
5. ournal of Prosthodontic Research
6. Journal of Prosthetic Dentistry
7. Journal of Dental Technology
8. International Journal of Prosthodontics
9. Quintessence of dental technology
10. Dental Material
11. Dentistry
12. Journal of Oral Rehabilitation

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	7031	**SEMESTER**	7st
COURSE TITLE	AESTHETICS of PROSTHETIC RESTORATIONS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc .If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	2	4
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC/C Specialization Course/Compulsory
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT129/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students will understand the importance of aesthetics in prostheses in relation to color and dental characteristics.

Upon successful completion of the course, students will be able to:

· Explain what is color (definition of color) and describe its nature.
· recognize the basic elements of color theory.
· recognize and describe the basic properties of light.
· distinguish and explain the relationship of light with color.
· recognize and describe the basic properties and dimensions of light and colors.
· understand the methods of production of colors, as well as the categories of colors.
· know and distinguish the systems of measurement or recognition of colors, their advantages and disadvantages, as well as their use.
· understand the properties of color and bodies that are applicable to dental technology.
· know the modern color measurement devices in dental technology.
· analyze the ways of proper reproduction of color in the various dental and dental restorations.
· Demonstrate that they understand the whole process of applying all the prior knowledge in dental technology.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information,
with the use of the necessary technology
Decision-making
Criticism and self-criticism
Production of free, creative and inductive thinking
Respect for the natural environment
Working in an international environment
Showing social, professional and ethical responsibility and
sensitivity to gender issues

(3) SYLLABUS

The course is the basic introductory course on the concepts of color and the process of color making, which is a key factor for successful construction. It is offered through a cycle of 13 theoretical courses which are analyzed below:

· Historical dimension of aesthetics and color. Brief reference and introduction to the concept of aesthetics and color and then an attempt is made to make a historical a review of the evolution of these terms from antiquity to the present day.

· Light and nature of light. Analysis and juxtaposition of all basic knowledge about light, light sources and lighting necessary for the recognition of color and, by extension, of color aesthetic behavior of sources and objects.

· Eye- physiology of vision. Description of the human eye, both anatomically and functionally. Visible electromagnetic radiation, through the optical system of the eye (eye), is transferred to the retina. There, this natural stimulus turns into a nerve stimulation, which is passed on to the brain and turns into a sense of color.

· Basic properties of light related to aesthetics: reflection and diffusion of light, refraction of light, Total reflection of light, refraction of light through prism, scattering and absorption of light;

· Classification of bodies based on their visual properties: transparent, opaque and translucent

bodies.

· Light and colors. Set the color. Nature of color and its relationship to light.

· Classification and production of colors. Basic, secondary and complementary colors. Methods of production and combination of colors.

· Basic elements of colors (dimensions). Complexion or hue or color family, (hue), intensity or density, (chroma) and tone or brightness, (value).

· Systems for measuring or recognizing colors. OSA color system, (Optical Society of America), DIN color system, (Deutsche Institute fur Norming), NCS color system, (Natural Color System), Munsell color system, C.I. color system.E, (Commission Internationale d'Eclairage).

· Advantages and disadvantages of systems for measuring or recognizing colors. Indications and ways of their application in dental technology.

· Color measuring devices. Electronic instruments for measuring color. Colorimeters, spectrophthalmometers, cameras and image resolution devices.

· Properties of color and bodies, which are applicable to the process of its proper reproduction in various dental restorations. Postparty, chromatic contrast, chromatic fatigue of the eye.

· Properties of the color of natural teeth that are applied in the process of its proper reproduction in various dental restorations. Fluorescence, opalism, iridescentism, Maverick colors.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning ,etc.*	*Face-to-face*	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of lectures in the classroom. View video. Connection to the e-class platform. Internet connection and viewing of educational videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures(hours/week): 2	
	Total hours per week 2	*90*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	*Language of evaluation: Greek* Final written exam including: - Development questions aimed at understanding the basics of the theory - Multiple-choice questions - Short answer questions for the purpose of bench marking theory elements Specifically-defined evaluation criteria are: - Check the written text by the student - The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

GREEK:

1.Γαλιατσάτος Α. Βασικές αρχές οδοντικής αισθητικής- χρώμα και χαρακτηριστικά. [ηλεκτρ. βιβλ.] Αθήνα 2015, Σύνδεσμος Ελληνικών Ακαδημαϊκών Βιβλιοθηκών. Διαθέσιμο στο: https://repository.kallipos.gr/handle/11419/980

2. Δουβίτσας Γ Π: Κλινική αισθητική Οδοντιατρική . Εκδόσεις Ζήτα , Αθήνα 2004.

3.Αλεξόπουλος ΚΔ:. Γενική Φυσική . Τόμος 5ος , Οπτική , Αθήνα 1996

4.Χατχηκυριάκου Α.: Η αισθητική των Προσθετικών αποκαταστάσεων, Εκδόσεις Σιώκης, Αθήνα 2007.

5.Καπαγιαννίδης ΙΔ. Το χρώμα ως παράμετρος της αισθητικής των δοντιών, Βασικές αρχές χρωματομετρίας. 1οςτόμος. Θεσσαλονίκη: University Studio Press; 2006.

ENGLISH:

1.Chu SJ, Devigus A, Mieleszko A. Fundamentals of color. Quintessence Publ Co, Germany, 2004

2.Miler L: Organizing colour in dentistry. The Journal of the American Dental Associations. 1987: 26-40.

3.Goldstein ER: Aesthetics in dentistry. 2nd Edition. B.C. Decket INC. Hamilton London, 1998.

4.Berns SR, Billmeyer FW, Saltzman S. Principles of color technology, 3rd ed, New York: John Wiley & Sons; 2000.

5.Rufenacht CR. Principles of esthetic integration. Quintessence Publ Co, Germany, 2000.

Related academic journals:

1. ΟδοντοστοματολογικήΠρόοδος

2. Στοματολογία

3. Journal of Esthetic Dentistry

4. Journal of Prosthetic Dentistry

5. Journal of Dental Technology

6. International journal of prosthodontics

7. Quintessence of dental technology

8. Dental Material

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7041-7042	**SEMESTER**	7st
COURSE TITLE	FIXED PROSTHODONTICS III		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	**10**
LABORATORY	7	
TOTAL	**10**	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC/C SPECIALIZATION COURSE/COMPULSORY
PREREQUISITE COURSES:	FIXED PROSTHODONTICS II
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT117/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to acquire the necessary scientific and applied knowledge that will enable them to design and construct fixed dental prostheses, according to modern opinions and materials;

Upon successful completion of the course, students will be able to:

- know the purposes, the goals and the necessity of the application of modern stationary dental additions and specifically veneers from polymers and ceramic materials, inlays, on-lays, and overlays of polymers and ceramic materials, fixed crowns and bridges without a metal frame made of polymers and ceramic materials, bridges partial coating (Maryland), laser welding, as well as the selective laser sintering technique.
- understand the necessity of aesthetic and functional restoration of the oral cavity with the application of these modern structures.
- acquire the scientific knowledge that determines the basic principles of manufacture of these prostheses.
- understand and analyze the rules of their design, both in the anterior and in the posterior area of the dental barrier.
- distinguish and recognize the different types of modern fixed prosthetic structures without a metal

frame.
- familiarize themselves with the current data of dental technology and bio materials.
- use the various devices required to complete such constructions.
- get to know and understand, theoretically and practically, the construction stages of these fixed prosthetic structures.
- know, select and use modern materials and construction methods.
- know methods of welding prosthetic restorations with modern Laser technology.
- demonstrate that they understand the whole process of applying all previous knowledge in dental technology.
- acquire the necessary skills for their professional protection and competitiveness.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Search for, analysis and synthesis of data and information,
with the use of the necessary technology
Decision-making
Criticism and self-criticism
Production of free, creative and inductive thinking
Respect for the natural environment
Working in an international environment
Showing social, professional and ethical responsibility and
sensitivity to gender issues

(3) SYLLABUS

Fixed Prosthetics III is a basic subject in the training of dental technologist and a prerequisite formally and substantially for their progress in subsequent courses Curriculum. The course is taught theoretically and practically through a cycle of theoretical and laboratory courses. The theory and the laboratory go hand in hand in time as far as possible, so that students are taught theory and apply laboratory.

Theory:

1. Fixed Prosthetic Structures Without Metal Frame. This section refers to the fixed prosthetic structures without a metal frame, i.e. the veneer crowns, the inlays, on lays and overlays, on the crowns and bridges without a metal frame, made of polymers and ceramic materials of high strength, fixed CAD-CAM constructions, giving their definitions and presenting their types.
2. Fixed Prosthetic Structures Without Metal Frame. This section is a continuation of the previous one and presents the indications and contraindications, advantages and disadvantages, as well as the way of their manufacture Succinctly.
3. Inlays, on-lays, overlays from polymeric materials. This section presents and analyzes these structures, as well as their construction stages.
4. Inlays, on-lays, super-inlays of ceramic materials. This section presents and analyzes these structures, as well as their construction stages.
5. veneer crowns made of polymer additives. This section presents and analyzes these structures, as well as their construction stages.
6. veneer crowns made of ceramic materials. This section presents and analyzes these structures, as well as their construction stages.
7. Crowns without a metal frame. This section presents and analyzes these structures, as well as their construction stages.
8. Bridges without a metal frame. This section presents and analyzes these structures, as well as their construction stages.
9. Design of crowns and bridges without a metal frame, both in the front and in the posterior area of the barrier. This section analyzes the points of special attention during the design and laboratory construction of these structures.
10. Partial overlap bridges (Maryland). This section presents partial overlapping bridges, their advantages and disadvantages, their indications and contraindications, as well as the laboratory way their construction.
11. Laser welding. This section presents the modern laser welding technique in stationary prosthetics, emphasizing on its advantages and construction stages.
12. Selective Laser Sintering technique. This section presents and analyzes this modern technique of manufacturing prosthetic restorations.

Laboratory:

Along with the theoretical training, the student is trained in the laboratory of fixed Prosthetics III, creating and constructing modern fixed prosthetics constructions, both on anterior and posterior teeth following all the stages of construction and using the modern equipment of the Department's Laboratory.

The laboratory exercises of the course are:

EXERCISE 1. Construction of casts- installation of pins

EXERCISE 2. Cutting of abutments- configuration of necks- suspension on a hinge

EXERCISE 3. Construction of the 1st and 2nd group inlays entirely from polymeric photopolymerized

materials.

EXERCISE 4. Manufacture of onlays and overlays on posterior teeth entirely from polymeric photopolymerized materials.

EXERCISE 5. Manufacture of veneer prostheses from polymers of photopolymerized materials in anterior teeth of the upper jaw.

EXERCISE 6. Manufacture of veneer prostheses from polymers of photopolymerized materials on anterior teeth of the lower jaw.

EXERCISE 7. Manufacture of crowns of anterior teeth of the upper jaw without a metal frame. 1st stage

EXERCISE 8. Manufacture of crowns of anterior teeth of the upper jaw without a metal frame. 2nd stage.

EXERCISE 9. Manufacture of crowns of anterior teeth of the lower jaw without a metal frame. 1st stage.

EXERCISE 10. Manufacture of crowns of anterior teeth of the lower jaw without a metal frame. 2nd stage.

EXERCISE 11. Grinding and polishing of all previous structures.

EXERCISE 12. Laser bridge sections welding technique. Construction demonstration.

EXERCISE 13.Final practical laboratory evaluation on the content of exercises 1-12 (I)

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	*Face-to-face*	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of lectures in the classroom. View video. Connection to the e-class platform. Internet connection and viewing of educational videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures(hours/week): 3	
	Laboratory practice(hours/week): 7	
	Total hours per week 10	*300*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	*Language of evaluation: Greek* *Written final exam (60%) which includes:* - *Development questions aimed at understanding the basics of the theory* - *Multiple-choice questions* - *Short answer questions for the purpose of benchmarking theory elements* *Practical evaluation in the laboratory (40%) on the content of all laboratory exercises, which includes* - *Multiple-choice questions* - *Laboratory work* - *Check the written text by the student* - *Evaluation of students in the laboratory by at least two teachers and calculation of the average grade* - *The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.*

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Dimitropoulou E. The laboratory procedure in Fixed Prosthodontics. Self edition. Athens 2004

2. Antonopoulos A, Contemporary Fixed Prosthodontics. Ed. Symmetria Athens 1993

3. Gonidis D. Guide of exercises in Fixed Prosthodontics's Laboratory. Ed. Bonissel

4. Lomvardas G. Prosthetics, Ed. Melissa 1987

5. Shillinbourg T., Hobo S., Whitsett D., Fundamentals of Fixed Prosthodontics, Εκδόσεις Quintessence 1981

6. Miller L., Esthetic Guidelines for Restorative Dentistry, Εκδόσεις Quintessence 1980

7. Tylman S., Malone W., Θεωρία και Πράξη της Ακίνητης Προσθετικής (ελληνική μετάφραση) Εκδόσεις Μπονισέλ 1978

8. Jonston F., Phillips W., Dykema W., Modern Practice in Crown and Bridge Prosthodontics Εκδόσεις W.B.Saunders Co, Philadelphia 1971

9.Γαλιατσάτος Α.Α. Μελέτη του μηχανισμού συγκόλλησης πολυμερών επικαλύψεων σε κράματα που χρησιμοποιούνται στην ακίνητη προσθετική. Διδακτορική διατριβή, Αθήνα, 1995.

10.Γαλιατσάτος Α.Α. Νέα συστήματα πολυμερών επικαλύψεων στην Ακίνητη Προσθετική. Στοματολογία 55(4),154–164,1998.

Related academic journals:

1.Οδοντοστοματολογική Πρόοδος

2.Στοματολογία

3.Journal of Esthetic Dentistry

4.Journal of Prosthetic Dentistry

5.Journal of Dental Technology

6.International journal of prosthodontics

7.Quintessence of dental technology

8.Dental Material

9.European Journal of Prosthodontics and Restorative Dentistry

9.7.5 8th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
DIVISION	Dental Technology		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8011	**SEMESTER**	8th
COURSE TITLE	MANAGEMENT of OCCLUSAL DISORDERS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
Lectures	3	3
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	Compulsory Specialization Course (CSC)
PREREQUISITE COURSES:	..PHYSIOLOGY OF THE STOMATOGNATHIC SYSTEM– OCCLUSION
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	..GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT133/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

- To understand the rules of dental contacts in different kinds of prosthetic work.
- Get acquainted with the mechanical analogues of the movements of the lower jaw, the "Articulators", so that they are able to use them in everyday laboratory practice.
- To prepare, in collaboration with the dentist, the occlusion before the prosthetic restoration.
- To know how to construct various types of splints
- To know how to rehabilitate the occlusion in patients with dysfunctional problems of the stomatognathic system

The aim of the course is for students to understand the malfunctions of the chewing system, due to abnormalities of the position of the teeth and jaws and the ways to deal with them.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Decision-making	

(3) SYLLABUS

Theory – Lectures

1. Physiology of dental occlusion. Normal function and avoidance of damage to restored teeth. 2. Pathogenic (traumatic) occlusion. Early contacts, interference and para functional habits (bruxism). Occlusion and craniomandiblular disorders.

3. Reorganization of occlusion with prosthetic work, basic principles to be followed in the laboratory.

4. Technical means and applications used in the laboratory for the performance of correct normal occlusion: Articulators, familiarity with various types of semi-adjustable articulators. Face- bow recordings. Intraoral occlusal recordings- laboratory application. Laboratory means of checking and controlling occlusal contacts & relationships.

5. General laboratory techniques for the reproduction of occlusal relationships of the anterior and posterior teeth: Mounting cast techniques. Reproduction of the anterior guidance- construction of an individual incisor table. Techniques of waxing aesthetics and functional occlusion. Diagnostic waxing up.

6. Restoration of disorganized occlusion in the laboratory: Restoration of occlusion with Fixed and Removable prostheses. Occlusion restoration with Implant prostheses.

7. Oral Splints- Modern techniques for the manufacture of full coverage oral splints. Construction stages of the Stabilization splint.

8. Selective grinding. Selective grinding rules for fixed prosthetic restorations

During the semester, students perform exercises or conduct case studies.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Projective system and presentation ability with the implementation of the Power Point Program. Using search engines bibliography HEAL-LINK, PUBMED, SCOPUS, Medline, GOOGLE SCHOLAR. Use of e-mail and the Department's website for communication and information of students respectively. View educational videos. Support of the Learning Process through the e-class platform.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures - Tutorial exercises	
	Course total	*90*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written final exam (70%) which includes: 1. Multiple choice questions 2. Short Answer Questions 3. Development questions 4. Questions of judgment, understanding of the theory and evaluation of way of thinking. Students, when given the topics, are informed about how to evaluate each group of topics, depending on their degree of difficulty and the completeness of the answer, the clarity, the degree of critical thinking of the student and the language proficiency are taken into account. Presentation of Group Work (30%) The theory is examined in the final examination, while in case of individual or group work, the grade of the latter participates up to 30% in the formation of the grade of the theory. Student writing check

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. Rosenstiel FS., Land MF., Fujimoto J. (Μετάφραση: Κοΐδης Π. Θ): Σύγχρονη ακίνητη προσθετική. Οδοντιατρικές Εκδόσεις Μπονισέλ. Αθήνα 2012.
2. Wassell R, Naru A, Steele J, Nohl F. (Μετάφραση: Γαρέφης Π): Σύγκλειση. Από τη θεωρία στην καθημερινή οδοντιατρική πράξη. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2010.
3. Δρούκας Β.: Λειτουργία και δυσλειτουργία του στοματογναθικού συστήματος. 3η έκδοση. Επιστημονικές Εκδόσεις Παρισιάνου. Αθήνα 2008.
4. Ανδριτσάκης Π.Δ.: Ακίνητη Επανορθωτική Οδοντιατρική. Οδοντιατρικές εκδόσεις Σπ. Ζαχαρόπουλος. Αθήνα 2008.
5. Misch CE. (Μετάφραση Λομβαρδάς Π).: Η Προσθετική των Οδοντικών Εμφυτευμάτων. Μπονισέλ, Αθήνα 2008
6. Γαρέφης Π.: Ακίνητη Προσθετική. Λειτουργία και αισθητική στις μεταλλοκεραμικές και ολοκεραμικές αποκαταστάσεις. Κλινικές διαδικασίες. Συνεργασία με το οδοντοτεχνικό εργαστήριο. Εκδόσεις Οδοντιατρικό Βήμα. Αθήνα 2013.
7. Τσόλκα Π.: Φυσιολογία Στοματογναθικού Συστήματος- Συγκλεισιολογία.Ανοικτό Ακαδημαϊκό Μάθημα στο ΤΕΙ Αθήνας. Έκδοση 1,0. Αθήνα 2015. Διαθέσιμο από τη δικτυακή διεύθυνση www.ocp.teiath.gr

International:

1. DawsonP.: Evaluation, DiagnosisandTreatment ofocclusalproblems. Mosby. St. Louis 1989.
2. Wise D.M.: Failure in the restored dentition: Management and Treatment. Quintessence Publishing Co, Ltd. London. 1995.
3. Okeson J.: Management of Temporomandibular disorders and occlusion. 4th edition. Mosby. St. Louis 1998.
4. ShillingburgHT, WilsonEL., MorrisonJT.: GuidetoOcclusalWaxing. 3rd edition. QuintessencePublishingCo, Ltd. Chicago. 2000.
5. Gross M.: The science and art of occlusion and oral rehabilitation. QuintessencePublishingCo, Ltd. London. 2015.

- Related academic journals:

Journal of Prosthetic Dentistry
International Journal of Prosthodontics
European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	**6 (Undergraduate)**		
COURSE CODE	**8021-8022**	**COURSE SEMESTER**	**Eighth**
COURSE TITLE	**IMPLANT PROSTHODONTICS**		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures / Exercises	4	**10**
Laboratory	6	
Total	**10**	
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Specific Background Course/ Compulsory (SBC/C)
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	**Greek**
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://eclass.teiath.gr/modules/document/?course=DENT114

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will:

- know what osseo integration is
- know the existing possibilities and choices for edentulism restoration with implants.
- know the dental technician's role in implant restoration and how to cooperate harmoniously with the dentist and his/her team.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

……

Others…

…….

- Working independently
- Team work
- Search for, analysis and synthesis of data and information, with the use of the necessary technology
- Working in an interdisciplinary environment
- Production of free, creative and inductive thinking

(3) SYLLABUS

The course includes a series of theoretical and laboratory classes, so that students make application of what they learn in theory.

Theory

The course consists of a cycle of theory classes. For educational reasons, it is divided into a general part and a special part comprising of the corresponding units:

GENERAL PART

1. History overview. Brief reference to the evolution of implants.

2. Analysisofthevariouschoices a patient has for the restoration of edentulism. Advantages, disadvantages, indications and contra-indications.

3. Familiarization with the terminology and the meaning of 'prognosis' and 'sustainability'

4. Study of effect of implants on masticatory performance.

5. Occlusal schemata in implant-supported prosthetics.

SPECIAL PART

1. Pre-prosthetic procedures. Casestudy, radiographicaland surgical stent. Temporary restorations.

2. Complete or partial edentulism. Fixed implant prosthesis. Screw or cement retained implant restorations. Combination of metal frameworks with polymers or porcelain.

3. Implantretained overdentures. Retentionelements- ball attachments, bar and magnet retainers.

4. Passive fit. Students are taught all the parameters about the construction of passively fitting implant framework.

5. Digital implant prosthesis workflow.

During the semester, students take part in group assignments such as the preparation and presentation of a project on a specific topic, case studies, etc.

The course "Implant Prosthodontics" can neither cover all cases, as they are innumerable, nor present all available implant systems on the market today, which are really more than enough. Its ultimate goal is to inform the students, make them think about and motivate them to study about the innovative specialty of Prosthodontics.

Lab

1. Construction of a lower jaw cast with three teeth missing (45, 46,47), two implants placed in 45, 47 and gum imitating material.

2. Waxing of a screw retained metal-ceramic bridge template on plastic prosthetic cylinders.

3. Casting and finishing of the framework.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>In lecture hall.

Undergraduate Internship in the laboratories of the division of Dental Technology.</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
Use of ICT in teaching, laboratory education, communication with students</td><td>Use of I.C.T. in Teaching for the slide show screen and course presentation. Use of e-mail, Web page of the Division and e-class platform for the students communication, correspondence and notification.</td></tr>
<tr><td>TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Contributions and Lectures with the use of audiovisual tools. Use of open e-class for the posting and handling of e-book (https://eclass.teiath.gr/modules/document/?course=DENT112), scientific articles, instructions, lectures, useful websites (links), questionnaires, exercises, etc.</td><td></td></tr>
<tr><td>Laboratory practice, field exercise, in small groups of 20-25 students.</td><td></td></tr>
<tr><td>Course total</td><td>300</td></tr>
</table>
</td></tr>
<tr><td>STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of</td><td>Theory; written examination (60%)

Laboratory practice; laboratory evaluation (40%)</td></tr>
</table>

evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Student writing test is free for inspection by the student itself Assessment in the laboratory by at least two teachers and calculation of the average

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

(Greek)

1. Γιαννικάκης Σ, Καρκαζής Η.: Προσθετική σε εμφυτεύματα. Εργαστηριακή τεχνική. Αθήνα 2018. Ηλεκτρονικό βιβλίο: https://eclass.teiath.gr/modules/document/?course=DENT114

2.Γιαννικάκης Σ, Καρκαζής Η.: Προσθετική επί εμφυτευμάτων. Εργαστήριο. Εκδόσεις Μπονισέλ. Αθήνα 2007.

(Foreign)

1. BränemarkP.-I, Zarb G, Albrektsson T: Tissue-integrated prostheses. Quintessence Publ. Co., Inc. Chicago 1985.

2. Hobo S, Ichida E, Garcia L: Osseointegration and occlusal rehabilitation. Quintessence Publ. Co., Inc. Tokyo 1991.

3. Spiekermann H. et al: Implantology. Thieme. New York 1995

4. White GE: Osseointegrated dental technology. Quintessence Publ. Co. Ltd. London 1993

Related academic journals:

International Journal of Oral and Maxillofacial Implants

Journal of Prosthetic Dentistry

International Journal of Prosthodontics

European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
DIVISION	Dental Technology		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	8031-8032	**SEMESTER**	8th
COURSE TITLE	DIGITAL DENTAL TECHNOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
Lectures	3	**6**
Laboratory	4	
TOTAL	**7**	
Addrowsifnecessary.T he organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SBC/C Specific Background Course/Compulsory
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course students will be able to:

• Know the modern technological developments in the field of design and construction of prosthetic works with the help of information technology.

• use computers, design programs and devices for the construction of additional work with the CAD / CAM method.

• understand all the technological elements and peculiarities that make up the special CAD CAM systems of Dental Technology.

General Competences

Taking into consideration the general competences that the degree-holder must acquire

(as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Search, analysis and synthesis of data and information, using the necessary technologies • Production of new research ideas	

(3) **SYLLABUS**

The aim of the course is to introduce students to the design and production of additional work with the help of information technology. Students will become familiar with cutting edge technology and be trained in the constant search for data and literature for their constant information.

The course "Dental Technology Informatics" introduces students to the use of modern technology for the design and construction of prosthetic work. The CAD / CAM (Computer-aided design and Computer-aided manufacturing) method can now be used to construct all additional tasks. Students will be taught the use of the computer in managing add-on design programs. They will be trained in scanning a template or fingerprint and creating an electronic file. Then they will be taught that the electronic file after its processing with the design programs that accompany the method, can be converted into a framework of prosthetic work or even prosthetic work. They will become familiar with the construction options to date, e.g. cutting machines, selective metal fusion, etc., but also the robotic devices that accompany the method as mechanical equipment.

THEORY

The course material is divided into general and specific part.

The general part of the material analyzes general basic knowledge about mechanical equipment systems as they are generally used in industry, while the special part analyzes the

specialized topics related to CAD CAM technology as it is applied in Dental Technology.

In particular, the issues of scanning with special scanners, the issues of special cutting machines (milling), issues related to the special materials for the laboratory CAD CAM, issues related to the method of rapid prototyping (Rapid Prototyping) are analyzed, while at the end the basic Steps to handle two software, one drawing and one cutting.

LABORATORY

The workshop is carried out in a laboratory specially equipped with networked PCs and special denture design software. The laboratory has 7 jobs and is connected to the Internet.

The software design capabilities are first demonstrated and then students in groups of 10 work with the design program and become familiar with it.

Finally, a candle cutting demonstration of a finished work of the students is performed by the special cutting machine that the laboratory has.

(4) **TEACHING and LEARNING METHODS- EVALUATION**

DELIVERY *Face-to-face,Distancelearning,etc.*	In the classroom and in the laboratory
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of the lessons in the room. Connect to the internet and view instructional videos.
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** / ***Semester workload*** Lectures: 100 Laboratory exercise: 80 Course total: *180*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written examination (60%) Laboratory evaluation (40%) • Written check by the student • Evaluation of students in the laboratory by at least two teachers and calculation of the average grade • The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Μπιλάλης Ν. ΜαραβελάκηςΕμμ. Συστήματα CAD/CAM και τρισδιάστατη μοντελοποίηση. Κριτική. Αθήνα 2009.ISBN:9789602186176
2. LeeK. Μετάφραση Καρανικολός Κ. Βασικές αρχές συστημάτων CAD/CAM/CAE. Κλειδάριθμος. Αθήνα 2009.ISBN:9789604611393.
3. Priest G. Optimal Results in the Esthetic Zone with CAD/CAM Implant Abutments. Quint Pub. 2007
4. Priest G. Precision, Esthetics, and Simplicity of CAD/CAM Abutments and Frameworks. Quint Pub. 2010
5. Medland AJ, Burnett Piers. CAD/CAM in practice: a manager's guide to understanding and using CAD/CAM. Kogan Page. London 1986.ISBN:0850388171.

- Related academic journals:

1. Ελληνικά Στοματολογικά Χρονικά
2. Οδοντοστοματολογική Πρόοδος
3. Στοματολογία
4. Journal of Advanced Prosthodontics
5. Journal of Prosthodontic Research
6. Journal of Prosthetic Dentistry
7. Journal of Dental Technology
8. International Journal of Prosthodontics
9. Quintessence of dental technology
10. Dental Material
11. Dentistry
12. Journal of Oral Rehabilitation

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8041	**SEMESTER**	8st
COURSE TITLE	POLYMER AESTHETIC VENEERING MATERIALS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	**4**
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SC/EC SPECIALIZATION COURSE/ COMPULSORY ELECTIVE
PREREQUISITE COURSES:	NONE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of the course, students will be able to:

· explain what polymeric materials are and to describe their nature.

· understand the production methods of polymers, as well as their categories.

· understand the types and properties of polymers that are applicable to dental technology.

· distinguish and explain the relationship of dental polymers with aesthetics.

· know the modern polymers of aesthetic coating and the prosthetic constructions made from them.

· recognize and describe modern polymers of aesthetic coating.

· know and distinguish their advantages and disadvantages, as well as their use.

· know the modern devices used for the polymerization of these materials.

· Demonstrate that they understand the whole process of applying all the prior knowledge in dental technology.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Search for, analysis and synthesis of data and information, with the use of the necessary technology Decision-making Criticism and self-criticism Production of free, creative and inductive thinking Respect for the natural environment Working in an international environment Showing social, professional and ethical responsibility and sensitivity to gender issues	

(3) SYLLABUS

The course is a key factor for the successful construction of prosthetic restorations with the use of modern aesthetic coating polymers. It is offered through a cycle of 13 theoretical courses which are analyzed below:

· Introduction to polymer technology. Definition. Onomatology. Fundamentals.

· Classification of polymers. Polymer categories. Linear, intersected, homopolymers, copolymers.

· Polymeric states. Amorphous, crystalline, elastomers, point of vitrous transition.

· Polymer polymerization. Polymers condensation. Polymers of addition. Degree of polymerization of polymers. Molecular weight.

· Biomaterial polymers: biostable, biodegradable, water-soluble. Polymers used in the manufacture of substitutes for the human body.

· Dental polymers and polymers of dental technology: composite resins, dental waxes, impression materials, acrylic resin, denture base materials, etc.

· Reinforced polymeric materials for aesthetic restorations or laboratory composite resins. Definition and types.

· Reinforced polymers of aesthetic coating. Advantages, disadvantages, indications, contraindications, applications, types of construction.

· Modern polymeric systems of aesthetic coating. Description, mode of use, points of special attention during the laboratory procedure.

· Polymers of aesthetic coating in the fixed prosthetics. Kinds, applications, way of use. Demonstration of clinical cases.

· Polymers of aesthetic coating in fixed prosthetics. Kinds, applications, way of use. Demonstration of clinical cases.

· Polymers of aesthetic coating and implants. Kinds, applications, way of use. Demonstration of clinical cases.

· Polymers of aesthetic coating with CAD-CAM technology. Kinds, applications, way of use. Demonstration of clinical cases.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning,etc.*	*Face-to-face*	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	YES Use of electronic technology for the presentation of lectures in the classroom. View video. Connection to the e-class platform. Internet connection and viewing of educational videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures(hours/week): 3	
	Total hours per week 3	*120*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,public presentation,laboratorywork,clinicalexamination ofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	*Language of evaluation: Greek* *Final written exam including:* · *Development questions aimed at understanding the basics of the theory* · *Multiple-choice questions* · *Short answer questions for the purpose of bench marking theory elements* · *Check the written text by the student* · *The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.*

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Dimitropoulou E. The laboratory procedure in Fixed Prosthodontics. Self edition. Athens 2004
2. Antonopoulos A, Contemporary Fixed Prosthodontics. Ed. Symmetria Athens 1993
3. Gonidis D. Guide of exercises in Fixed Prosthodontics's Laboratory. Ed. Bonissel
4. Lomvardas G. Prosthetics, Ed. Melissa 1987
5. Shillinbourg T., Hobo S., Whitsett D., Fundamentals of Fixed Prosthodontics, Εκδόσεις Quintessence 1981
6. Miller L., Esthetic Guidelines for Restorative Dentistry, Εκδόσεις Quintessence 1980
7. Tylman S., Malone W., Θεωρία και Πράξη της Ακίνητης Προσθετικής (ελληνική μετάφραση) Εκδόσεις Μπονισέλ 1978
8. Jonston F., Phillips W., Dykema W., Modern Practice in Crown and Bridge Prosthodontics Εκδόσεις W.B.Saunders Co, Philadelphia 1971
9.Γαλιατσάτος Α.Α. Μελέτη του μηχανισμού συγκόλλησης πολυμερών επικαλύψεων σε κράματα που χρησιμοποιούνται στην ακίνητη προσθετική. Διδακτορική διατριβή, Αθήνα, 1995.
10.Γαλιατσάτος Α.Α. Νέα συστήματα πολυμερών επικαλύψεων στην Ακίνητη Προσθετική. Στοματολογία 55(4),154–164,1998.

Related academic journals:

1.Οδοντοστοματολογική Πρόοδος

2.Στοματολογία

3.Journal of Esthetic Dentistry

4.Journal of Prosthetic Dentistry

5.Journal of Dental Technology

6.International journal of prosthodontics

7.Quintessence of dental technology

8.Dental Material

9.European Journal of Prosthodontics and Restorative Dentistry

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8042	**SEMESTER**	8TH
COURSE TITLE	CERAMIC AESTHETIC VENEERING MATERIALS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
LECTURES	3 (T)	4
Addrowsifnecessary.The organisation ofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	SC/CE SPECIALIZATION COURSE/ COMPULSORY ELECTIVE
PREREQUISITE COURSES:	FIXED PROSTHODONTICS III, DENTAL CERAMICS II
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED T ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNINGOUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of the subject the students will be in a position to:

- know the contemporary ceramic aesthetic veneering systems and their use
- know theoretically and practically the stages in fabricating restorations using the most widespread such systems
- identify the specific types and the properties of the ceramic aesthetic veneering materials that are applicable to dental technology
- know which steps are of their own responsibility and how to cooperate harmoniously with the dentist
- know all the variations of the contemporary all-ceramic restorations that are currently part of the everyday dental technology practice.
- know and discern their advantages and disadvantages as well as their use
- know which are the current devices used to fabricate restorations with these materials
- demonstrate that they understand the complete procedure of how to apply the aforementioned knowledge to Dental Technology

General Competences

Taking into consideration the general competences that the degree-holder must acquire

(as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Working independently • Team work • Decision-making • Working in an interdisciplinary environment • Search, analysis and synthesis of data and information with the use of necessary technology	

(3) SYLLABUS

The course is offered through a cycle of 13 theoretical lectures:

1. Introduction to the Technology of Ceramic Aesthetic Veneering Materials. Definition, Nomenclature, Basic Principles
2. Ceramic Aesthetic Veneering Materials classification. Categories and types
3. High strength ceramics. Reinforcing mechanisms for dental ceramics
4. Alumina core ceramics. Definition, indications, contra-indications, advantages, disadvantages, aesthetic properties, use
5. Slip-cast ceramics. Definition, indications, contra-indications, advantages, disadvantages, aesthetic properties, use
6. Heat – pressed leucite and lithium disilicate based ceramics
7. Ceramic Aesthetic Veneering Materials and CAD/CAM technology. Types, applications, use
8. The Cerec system. Indications and fabrication procedure
9. Fusion and mechanical milling ceramics. Types, applications and fabrication procedure
10. Zirconium ceramics. Definition, indications, contra-indications, advantages, disadvantages
11. Zirconium ceramics. Aesthetic properties, Use
12. Zirconium ceramics. Cases and laboratory procedure
13. Ceramic Aesthetic Veneering Materials and implants. Types, applications, use. Case studies.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face lectures
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Electronic technology use for the lectures' presentations projection. Video projection. Connection with the E-class platform. Internet connection to project educational videos.

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	*Semester workload*
Lectures	
Study and analysis of the pertinent literature	
Course total	*120*

STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicprese ntation,laboratorywork,clinicalexaminationofpa tient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

Written final examination that includes:

- Essay type questions to demonstrate the understanding of the basic theoretical elements taught
- Multiple choice questions
- Short answer questions to demonstrate the critical evaluation of the theoretical elements taught
- Students are able to review their written paper
- This subject is assessed on completion of the semester through the departmental internal assessment procedure applied on all subjects

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. *Ανδριτσάκη Δ.Π. Ολοκεραμικές αισθητικές αποκαταστάσεις. Εκδόσεις Αδάμ, Αθήνα, 1994.*
2. *Καφούσια Ν., Μπαλτζάκη Γ., Σταθόπουλου Α. Οδοντιατρικά βιουλικά. Εκδόσεις ακίδα, Αθήνα, 1994.*
3. *Ανδριτσάκη Δ.Π. Ακίνητη επανορθωτική οδοντιατρική. Εκδόσεις Ζαχαρόπουλος, Αθήνα, 2002.*
4. *Αντωνόπουλου Α. Σύγχρονη ακίνητη προσθετική. Εκδόσεις Συμμετρία, Αθήνα , 1993.*

International:

1. *Shillinburg HT, Hobo S, Whitsett LD, Jacobi R, Brackett ES. Fundamentals of fixed prosthodontics. Quintessence publ co, Chicago, 1997.*
2. *Dietschi D, Spreafico R. Adhesive metai-free restorations. Quintessecepubl co, Chicago, 1997.*
3. *Garber D, Goldstein R. Porcelain and composite inlays and onlays. Quintessecepubl co, Chicago, 1994.*
4. *Garber D, Goldstein R, Freiman R. Porcelain laminate veneers. Quintessecepubl co, Chicago, 1988.*
5. *McLean j,Kedge M. High strength ceramics, IN Proccedings of the 4th International symposium on ceramics. Quintessecepubl co, Chicago, 1988.*
6. *La Hoste L, Bruggers K. Dental ceramics: A comparison of current systems. Quintessece of Dental technology 14,91-94,1990,1991.*
7. *Sorensen J, Knobe H, Torres T. In Ceram All ceramic bridge technology. Quintessence of dental technology*

15, 41-46, 1992.

8. *Beham G. IPS-Empress: a new ceramic technology. Ivoclar – vivadentreport, 6:1-13, 1990.*

- Related academic journals:

9. *Οδοντοστοματολογική Πρόοδος*
10. *Στοματολογία*
11. *Journal of Esthetic Dentistry*
12. *Journal of Prosthetic Dentistry*
13. *Journal of Dental Technology*
14. *International Journal of Prosthodontics*
15. *Quintessence of Dental Technology*
16. *Dental Materials*

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8051-8052	**SEMESTER**	8th
COURSE TITLE	MAXILLOFACIAL PROSTHODONTICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	3	5
LABORATORY	2	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	(CESC) COMPULSORY ELECTIVE SPECIALIZATION COURSE
PREREQUISITE COURSES:	PHYSIOLOGY OF THE STOMATOGNATHIC SYSTEM HISTOLOGY OF ORAL CAVITY AND DENTAL TISSUES
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	https://eclass.uniwa.gr/courses/DENT136/

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will be able to:

- Be aware of the necessity of constructing a maxillofacial prosthesis.
- know the types of maxillofacial restorations To know theoretically and practically the stages of its construction.
- Know the modern materials and methods of manufacturing maxillofacial prostheses.
- To work harmoniously with the Dentist for the construction of such work.

General Competences

Taking into consideration the general competences that the degree-holder must acquire

(as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Decision-making • Search, analysis and synthesis of data and information, using the necessary technologies	

(3) SYLLABUS

The course is taught theoretically and practically through a cycle of theoretical and laboratory courses. The theory and the laboratory go hand in hand as far as possible, so that students are taught theory and apply laboratory.

Theory. The theory of the course is divided for educational reasons into two parts, general and specific with the corresponding thematic units:

GENERAL PART 1. Historical Review. Knowledge of the evolutionary stages of Maxillofacial Prosthetics is a prerequisite for understanding contemporary views on the subject. 2. Evidence of epidemiology. The knowledge of the causes that lead to the creation of maxillofacial deficits is crucial for the understanding of the treatment plan for the rehabilitation of such cases.

3. Materials for the manufacture of maxillofacial prostheses. The scientific knowledge of the physico-mechanical properties of the individual materials used, and especially the silicones, helps to better select the appropriate material for the need for the appropriate method.

4. Color, pigments, methods of coloring. Extraoral prostheses need staining that corresponds to the color of the surrounding facial tissues.

SPECIFIC PART 1. Intraoral deficits: Laboratory technique-Stages of construction-palatal obturator, pharyngeal obturator.

2. Extraoral deficits: Laboratory technique-Stages of construction- eye, ear and nose.

3. Design and manufacture of extraoral maxillofacial prostheses using modern technological

means. During the semester, students perform exercises or conduct case studies.

The construction of a maxillofacial prosthesis is the most difficult task. The difficulty concerns both those involved in its construction, the Dentist and the Dental Technician. Knowledge of the theoretical rules of its operation, the physico-mechanical properties of the materials used and the classical or alternative methods of its manufacture is a prerequisite for success.

Laboratory.

1. Laboratory techniques and the stages of manufacturing prosthetic restorations of intraoral deficits- obturators

2. Laboratory techniques and the stages of manufacture of extraoral prosthesis – nose.

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of lessons in the classroom. View educational videos.	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	
	Lab	
	Course total	*150*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Theory Written final exam (60%) which includes: Short development questions. Laboratory Evaluation in the laboratory (40%). Student writing check	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. Καρκαζή Η, Πολυζώη Γρ: Εισαγωγή στη γηροδοντιατρική και γναθοπροσωπική προσθετική. Β΄ Έκδοση. Εκδόσεις Μπονισέλ. Αθήνα 1998.

2. Δημητρίου Π, Ζήση Α, Καρκαζή Η, Πολυζώη Γ, Σταυράκη Γ: Κινητή Προσθετική. Ολικές Οδοντοστοιχίες. 4η έκδοση. Εκδόσεις Μπονισέλ. Αθήνα 2001.

3. Γιαννικάκη Σ: Ολικές Οδοντοστοιχίες. Εργαστήριο. Εκδόσεις Μπονισέλ. Αθήνα 2003.

ENGLISH:

1. Taylor T: Clinical maxillofacial prosthetics. Quintessence. China 2000

2. Thomas K: Prosthetic rehabilitation. Quintessence Publ. Co. Ltd., London 1994

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF BIOMEDICAL SCIENCES		
	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8053-8054	**SEMESTER**	8TH
COURSE TITLE	SPECIALIZED ORTHODONTICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
THEORY (T)	3 (T)	5
LABORATORY (L)	2 (L)	
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	SPECIALIZATION, OPTIONAL
PREREQUISITE COURSES:	ORTHODONTICS I & II
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon competition of the course students will

- Learn about the welding of orthodontic wires with electro welder as well as laser.
- have in depth knowledge about orthodontic appliances, their function and applications.
- have acquired the theoretical and practical knowledge about the step-by-step construction of a complex orthodontic appliance.
- Have basic knowledge in orthodontic biomechanics, so they can understand the needs of a specialized orthodontist in orthodontic appliances like aligners.
- Have a broad look in complex and hybrid orthodontic appliances like orthodontic appliances on temporary anchorage devices (mini orthodontic implants).
- Get familiar with the digital orthodontic techniques.
- Practice bibliographic research of a scientific topic
- Learn how to make a scientific presentation

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Working independently
- Teamwork
- Decision making
- Respect for the natural environment by making the right choice of the orthodontic materials
- Enhance the co-work of Orthodontist and Orthodontic Dental Technician
- Search, analysis and synthesis of data in the use of the right tools and materials for the laboratory work

3. SYLLABUS

Theory

1. Orthodontic biomechanics, principles and its use in the design and construction of orthodontic appliances.
2. Advanced orthodontic welding techniques.
3. Orthodontic appliances for reducing the symptoms of sleep apnea.
4. Digital planning of orthodontic aligners.
5. The role of dental technician in Lingual Orthodontics
6. Hybrid orthodontic appliances attached on temporary anchorage devices (mini orthodontic implants).
7. Scientific bibliographic research techniques.
8. Presentation of a scientific paper (from an orthodontic journal) to the students. Group work (3-4 students)

Lab

1. Welding of orthodontic wires using an electro welder.
2. Preparation of a digital orthodontic cast for aligner treatment.
3. Orthodontic casts measurements.
4. Construction of a functional appliance and/or a bite plane orthodontic appliance
5. Demonstration of a laser welding procedure and/or a electro welding procedure with argon.
6. Repair of and orthodontic plate.

(4) TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face in Class learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Support of the learning process through the MS Teams, Video Presentation

TEACHING METHODS

Themannerandmethodsofteachingaredescribed indetail.
Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,place ments,clinicalpractice,artworkshop,interactivete aching,educationalvisits, project, essay writing, artistic creativity,etc.

Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS

Activity	
Lectures	45
Laboratory practice (in Class)	30
Personal study	45
Presentation	30
Course total	*150*

STUDENT PERFORMANCE EVALUATION

Descriptionoftheevaluationprocedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoi cequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

Language of evaluation Greek
Methods of evaluation, summative or conclusive, multiple-choice questionnaires, short-answer questions, open-ended questions, problem solving, oral examination, laboratory work, presentation.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek:

1. Μαρκοστάμου Κ.: Εισαγωγή στην εργαστηριακή ορθοδοντική. Εκδόσεις Σταμούλης, Αθήνα 2000.
2. Σπυροπούλου Μ.: Εργαστηριακά μαθήματα Ορθοδοντικής, Αθήνα 1982.
3. Σπυροπούλου Μ. Ν.: Μορφογένεση και αύξηση του κρανιοπροσωπικού συμπλέγματος. Αθήνα 1983.
4. Σπυροπούλου Μ.: Βασικές αρχές ορθοδοντικής. Τόμος πρώτος. Εκδόσεις Λίτσας, Αθήνα 1990.
5. Σπυροπούλου Μ.: Βασικές αρχές ορθοδοντικής. Τόμος Δεύτερος. Β' Έκδοση. Εκδόσεις Βήτα, Αθήνα 2004.
6. Tenti F.: Άτλας ορθοδοντικών εφαρμογών. Μετάφραση: Κ. Μαρκοστάμος. Εκδόσεις Μπονισέλ, Αθήνα 1990.
7. EustaquioA. Araujo&PeterH. Buschang ΟΡΘΟΔΟΝΤΙΚΗ Διάγνωση και θεραπεία Αναπτυσσόμενων Ανωμαλιών Σύγκλεισης Επιστημονική επιμέλεια Ελένη Βασταρδή, Δημήτριος Κωνσταντώνης
8. Χαλαζωνίτης Δ.: Θεωρητικά στοιχεία ορθοδοντικής εμβιομηχανικής, Εκδόσεις Δ. Χαλαζωνίτης, 2000-2007.
9. Μπουλούχου Ο.: Σημειώσεις Ορθοδοντικής, ΤΕΙ Αθήνας
10. Ηλιάδης Θ., Ζηνέλης Σ.: Βιολογικά υλικά. Εισαγωγή στη μηχανική των ιστών.
11. Πολυχρόνης Γ. Εργαστηριακός Οδηγός Ορθοδοντικής Ι Σημειώσεις Ορθοδοντικής Επιστημονική επιμέλεια Κωνσταντίνος Παναγιωτής

Foreign:

12. Enlow D.H.: Facial growth. 3rd edition. W.B. Saunders Company, 1990.
13. Graber T. M., Neumann B.: Removable Orthodontic appliances. W.B.Saunders Company, Philadelphia, London, Toronto, 1977.
14. Graber T., Swain B.: Orthodontics, current principles and techniques. CV Mosby Co., St. Louis 1985.
15. Kahl-Nieke B: Einführung in die Kieferorthopädie. 2.Auflage. Urban & Fischer Verlag, München, Jena, 2001.
16. MoyersR.E.: Handbook of Orthodontics. Year Book Medical Publischers, Chidago 1988.
17. Orthodontic Aligner Treatment: A Review of Materials, Clinical Management and Evidence. THEODORE ELIADES & ATHANASIOS E. ATHANASIOU Stuttgart - New York – Delhi - Rio de Janeiro: Thieme, 2021; 1st edition ISBN: 978-3132411487, 225 pages, hard back
18. Wirtz, U. : O-Atlas, Atlas of orthodontic and orofacial orthopedic technique, Dentaurum 2007
19. Papadopoulos M., Orthodontic Treatment of the class II noncompliant patient (Book), Mosby Elsevier 2006
20. Eliades G, Eliades T., Brantley., Watts.: Dental Materials in Vivo. Aging and related Phenomena, Quintessence books, 2003
21. Scuzzo G, Takemoto K., Lombardo L. : Orthodontic Setup, Quintessenza Edizioni, 2014

- Related academic journals:

1. Hellenic Orthodontic Journal
2. American Journal of Orthodontics and Dentofacial Orthopedics
3. Angle Orthodontist
4. European Journal of Orthodontics
5. Journal of Clinical Orthodontics
6. Journal of Orofacial Orthopedics (Fortschritte der Kieferorthopaedie)
7. Journal of Orthodontics (formal, British Journal of Orthodontics)

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
DIVISION	Dental Technology		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	8061	**SEMESTER**	8th
COURSE TITLE	RESEARCH ORGANIZATION		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		2	**2**
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).			
COURSE TYPE *general background, special background, specialized general knowledge,skills development*	CESBC - Compulsory Elective Specific Background Course		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE(URL)			

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon completion of the course, students will:

- know the different steps of research preparation.
- have knowledge on finding bibliography or writing a research article.
- know the criteria that help in assessing research papers.
- have come in contact with research done in both the field of prosthodontics and the field of dental materials.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear

in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Search, analysis and synthesis of data and information, using the necessary technologies • Production of new research ideas	

(3) **SYLLABUS**

For educational reasons, the course is divided into two parts, the General one and the Special one. The general part refers to the steps in the research process regardless of the field of study. Preparing a research paper starts with choosing a topic. The steps that follow are finding bibliography, organizing research according to the research protocol, pilot studying, collecting and analyzing data and finally presenting it and publishing it in a scientific journal.

The special part refers to research methodology in Dental Technology. More specifically, issues such as methodology for studying dental materials, prostheses, specimen fabrication, testing, etc.

The course is completed in 13 lectures as follows:

1. Introduction-Science-Scientists / Researchers-Knowledge-Research Models

2. Starting and selecting the topic-Research categories - Method selection

3. Research of the literature

4. Research organization - Data collection and analysis

5. Writing - Presentation of results - Ethics in research

6. Research in Dental Technology-Types of research that are of interest to Dental Technology

7. Construction of essays-Study of materials of Dental Technology- Instruments for measuring the durability of materials- Method of measurement

8. Construction of non-geometric specimens Measurement of stresses in prosthetic works

9. Photoelasticity- Finite Element Analysis (FEA) method

10 Brittle coatings- Strain gauges

11. Data entry and analysis in special statistical software-Example of mixed research in dental technology Application of mixed research in the statistical program-Experiment with two sets of essays

12. Statistical evaluation of more than two mean values (ANOVA) -Experiments of many groups and factors with non-repetitive measurements

13. Experiments with repeated measurements on the same specimens- ANOVA with repeated measurements within the same specimens and with two factors

(4) **TEACHING and LEARNING METHODS- EVALUATION**

DELIVERY *Face-to-face,Distancelearning,etc.*	In the classroom	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of the lessons in the room. Internet connection and promotion of educational topics in the form of special sites or articles in pdf format, as well as educational videos. There is also a demonstration, in the form of experiments in the classroom, of the methods of experimental stress analysis in dental prostheses (experimental stress analysis)	
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail. Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity***	***Semester workload***
	Lectures	60
	Course total	*60*

STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written examination (100%) • Written check by the student • The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Θεοφανίδης Σ. Μεθοδολογία της επιστημονικής σκέψης και έρευνας. 1η Έκδοση. Αθήνα: Εκδόσεις Μπένου Ε, 1985.
2. Τριχόπουλου Δ., Τζώνου Δ., Κατσουγιάννη Κ., Βιοστατιστική, Εκδόσεις Μ. Παρισιάνου, Αθήνα 2000
3. Maxwell JA. Qualitative research design. An interactive approach. 1st Edition. London: SAGE Publications, 1996.
4. Blater L, Hughes C, Tight M. How to research. 1st Edition. Philadelphia: Open University Press, 1996.
5. Graziano AM, Raulin ML: Research methods. A process to inquiry. 3rd Edition. New York: Longman, 1997.
6. Dally J, Rilley W. Experimental stress analysis. 3rd Edition. New York:McGraw Hill International Editions, 1991.

.- Related academic journals:

1. International Journal of Research Methodology

International Journal of Science and Research Methodology

Journal of Research Practice

BMC Medical Research Methodology

Medical Publications (PubMed)

Science Direct

COURSE OUTLINE

(1) **GENERAL**

SCHOOL	SCHOOL OF HEALTH AND CARESCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
DIVISION	Dental Technology		
LEVEL OF STUDIES	6 (Undergraduate)		
COURSE CODE	8062	**SEMESTER**	8th
COURSE TITLE	BIOMECHANICS OF DENTAL TECHNOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	2	2
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSET YPE *general background,specialbackground,specialised general knowledge,skillsdevelopment*	CESBC – Compulsory Elective Specific Background Course
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	

(2) **LEARNING OUTCOMES**

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The importance of biomechanics knowledge in dental prosthetics is great for the dental technologist who designs them, as their design and construction should be based on understanding:

• the environment in which the prosthetic works operate

The process of loading the jaw tissues and prostheses during their operation and

• the mechanical behavior of dental prostheses by assessing the deformation and strength of the prostheses.

Upon completion of the co urse the students:

• will have understood the biomechanical behavior of the jaws and oral tissues.

• Understand the biomechanical behavior of prosthetic work, so that the ones they manufacturehave the maximum functional efficiency.

• Will know about the changes that may result in the design of dentures what changes may occur in the performance and durability of dentures

• Will become familiar with the scientific methods by which the mechanical behavior of dentures can be assessed, measured or studied.

General Competences *Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?*	
Search for, analysis and synthesis of data and information, with the use of the necessary technology *Adapting to new situations* *Decision-making* *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Project planning and management* *Respect for difference and multiculturalism* *Respect for the natural environment* *Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

- *Autonomous work*
- *Teamwork*
- *Search, analysis and synthesis of data and information, using the necessary technologies*
- *Production of new research ideas*

(3) **SYLLABUS**

The term biomechanics as a hybrid term like others like Biophysics, Biochemistry, covers the field of knowledge regarding the application of personalized knowledge in the violites and what changes occur when the violin takes the form of a prosthetic work environment and is exhausted oral cavity.

Engineering and mechanics is the science of constructions and machines and deals with their successful operation and optimal performance. Biomechanics and Bioengineering (Biomechanics and Bioengineering) deal with the application of the principles of mechanics and engineering in the human body

The course material is divided into two parts, the general and the special.

The general part analyzes some topics related to the biomechanical behavior of the vials used in Dental Technology as well as the introduction to methods of experimental stress analysis such as photoelasticity, strain gauges and the finite element method. The use of these methods in various prosthetic works (crowns, bridges, dentures, implants, etc.) will be analyzed in order to understand the scientific ways in which the effect of design on the functionality and durability of these works can be studied.

In the special part there will be a study and analysis of all that knowledge concerning the biomechanics and biomechanics of each type of prosthetic work. In particular, the biomechanics of the jaws and especially of the lower jaw, the biomechanics of the oral tissues with emphasis on the bone and mucosa, the biomechanics of the crown bridges of the complete and partial dentures and implants will be studied and analyzed.

(4) **TEACHING and LEARNING METHODS-EVALUATION**

DELIVERY *Face-to-face, Distance learning, etc.*	In the classroom

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of the lessons in the room. Internet connection and promotion of educational topics in the form of special sites or articles in pdf format, as well as educational videos. There is also a demonstration, in the form of experiments in the classroom, of the methods of experimental stress analysis in dental prosthetics (experimental stress analysis)
TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	***Activity*** — ***Semester workload*** Lectures — 60 Course total — *60*
STUDENT PERFORMANCE EVALUATION *Descriptionoftheevaluationprocedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	Written examination (100%) • Written check by the student • The course is evaluated at the end of the semester, through the internal evaluation process applied by the Department for all courses.

(5) **ATTACHED BIBLIOGRAPHY**

- *Suggested bibliography:*

1. *Rubo JH, Souza EA. Computational methods applied to bioengineering: solution of load problems in implant prosthesis. Rev Fac Odontol Bauru 2001;9:97Y103.*
2. *Sahin S, Cehreli MC, Yal0in E. The influence of functional forces on the biomechanics of implant-supported prosthesesVa review. J Dent 2002;30:271Y282.*
3. *Burstone C. J. (1985) Application of bioengineering to clinical orthodontics. In: Graber T. M. and Swain B. F. (eds),Orthodontic Principles and Techniques. St Louis. C.V. Mosby.*
4. *Caputo A. A. and Standlee J. P. (1987) Biomechanics in Clinical Dentistry. Chicago, Quintessence.*
5. *Waters N. E. (1982) The mechanics of removable appliances. In: Houston W. J. B. and Isaacson K. G. (eds). Orthodontic Treatment with Removable Appliances. Oxford. Wright (an imprint of Butterworth-Heinemann).*
6. *Goktas S, Dmytryk JJ, McFetridge PS. 2011Biomechanical behavior of oral soft tissues. J. Periodontol. 82, 1178–1186. (doi:10.1902/jop. 2011.100573)*
7. *Chen J, Ahmad R, Suenaga H, Li W, Swain M, Li Q. 2015 A comparative study on complete and implant retained denture treatments—a biomechanics perspective. J. Biomech. 48, 512–519. (doi:10.1016/j.jbiomech.2014.11.043).*
8. *Sawada A, Wakabayashi N, Ona M, Suzuki T. 2011Viscoelasticity of human oral mucosa: implications for masticatory biomechanics. J. Dental Res. 90, 590–595.*

(doi:10.1177/0022034510396881).

.- *Related academic journals:*

1. Journal of Biomechanics
2. Journal of Biomedical Engineering
3. International Journal of Biomedical Engineering and Technology
4. Biomedical Engineering
5. Journal of Advanced Prosthodontics
6. Journal of Prosthodontic Research
7. Journal of Prosthetic Dentistry
8. Journal of Dental Technology
9. International Journal of Prosthodontics
10. Quintessence of dental technology
11. Dental Material
12. Dentistry
13. Journal of Oral Rehabilitation

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	6 (UNDERGRADUATE)		
COURSE CODE	8071	**SEMESTER**	8th
COURSE TITLE	UNDERGRADUATE THESIS (DISSERTATION)		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
		5
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESC (COMPULSORY ELECTIVE SPECIALIZATION COURSE)
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE(URL)	..

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of a student study is to look through deeply into the currently acquired knowledge, the meticulous study of a specific scientific problem, the interpretation of a specific phenomenon or situation or any combination of the above depending on the subject, and the capability of the student in analyzing, composing, and logical processing of data. The most common ways to approach an undergraduate Thesis are: the Literature Review, the Experimental Research Study, the Case Study and the Clinical-Statistical Studies.

The procedure for conducting an undergraduate Thesis is analytically explained in the relevant Guide which is found in the Departmental website https://bisc.uniwa.gr/diplomatiki-ergasia/.

Upon completion of the course, students will know:

• To participate in a research group

• To draw up and follow a research paper protocol. • To evaluate the findings of the research

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Decision-making • Work in an interdisciplinary environment • Search, analysis and synthesis of data and information, using the necessary technologies	

3. SYLLABUS

During the last semester of studies, the students prepare a diploma thesis on a subject that must be directly related to issues of their specialty. The topics of the thesis are proposed by the Department's Faculty Members, who also undertake the supervision of the work. Upon completion of the project, the students present their Undergraduate Thesiss publicly to a three-member committee, which consists of the faculty members of the Division of Dental Technology. The presentation can be attended by other FM members as well as students.

4. TEACHING and LEARNING METHODS-EVALUATION

DELIVERY *Face-to-face,Distancelearning,etc.*	Distance learning, face to face.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology for the presentation of the work in the classroom	
TEACHING METHODS	***Activity***	***Semester workload***

Themannerandmethodsofteachingaredescribed indetail. *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of theECTS*	Project preparation, writing of a paper	
	Course total	*150*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other

Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.

Public presentation The evaluation criteria are:

A. Substantive criteria (written text).

1. Originality in the processing of the subject e.g. construction of laboratory stages and presentation, own photography, etc. Grade 5%
2. Completeness of the subject. It is examined and graded whether the student has fully covered the subject and all the parameters and has correctly distributed the volume of information according to its weight. Many times some parameters-methods-properties are presented excellently, but others are absent. Grade 10%.
3. Correctness of content. The support of the listed documents is evaluated not only bibliographically but also as a logic and the most important is the juxtaposition of the last views on the subject. Grade 5%
4. Structure, logical development. The distribution of content and the structure from the most general to the more specific are rated, something that distinguishes the two major parts of the thesis, the General and the Special part, as well as each Chapter and Subchapter. Grade 5%.
5. Understanding and deepening the topic. It is the most essential criterion where the student must manage to organize the information in a logical order and certainly to draw conclusions. Grade 10%
6. Adequate bibliographic support. Sufficiency is not necessarily judged numerically, but mainly by whether the literature is modern and sufficient for the subject. It is advisable that any thesis, no matter how "poor" the subject is, has more than 30 citations. Grade 5%
7. Cooperation with the supervisor. You rate the cooperation and the ability of the student to develop initiative (self-sufficiency) in the elaboration of the thesis. Grade 10%

B. Formal criteria (written text).

1. General appearance of the thesis. It is checked whether the body of the thesis is made according to the instructions. Grade 5%
2. Language of writing (demotic, person, etc.) Grade 5%
3. Image quality-captions-references. Grade 5%
4. Bibliography indicators. It is checked whether the support of paragraphs and chapters is sufficient. It is also checked whether the reference supporting a particular piece is actually relevant to the topic that the piece is dealing with. Grade 5%

	C. Presentation. 1. Distribution of information according to the time for the thorough presentation of the topic. Coverage of subject parameters. Grade 5% 2. Ability to present without the need for help (reading from notes, or transparency, etc.). General attitude of the student. Grade 10% 3. Aesthetics of presentation, student ability to create a decent presentation. Grade 5% 4. Understanding the topic. Grade 10%
	Total 100

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
It is recommended by the supervisor, in collaboration with the student, depending on the subject of the research

COURSE OUTLINE

1. GENERAL

SCHOOL	SCHOOL of HEALTH and CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	DENTAL TECHNOLOGY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8082	**SEMESTER**	8th
COURSE TITLE	UNDERGRADUATE INTERNSHIP		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratoryexercises,etc.Ifthecreditsareawardedforthewholeofthe course,givethe weeklyteachinghoursandthetotalcredits*	**WEEKLY TEACHIN G HOURS**	**CREDITS**
		6
Addrowsifnecessary.Theorganisationofteachingandtheteaching methodsusedaredescribedindetailat (d).		

COURSE TYPE *general background,specialbackground,specialisedgeneral knowledge,skillsdevelopment*	CESC (COMPULSORY ELECTIVE SPECIALIZATION COURSE)
PREREQUISITE COURSES:	In accordance with the provisions in force from time to time
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE(URL)	..

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The Undergraduate Internship is performed in four months in the last two semesters of study (7 & 8). Its completion will help to integrate the graduateS more quickly and directly into the labor market. Its purpose is to offer students, before graduation, the opportunity to apply in practice and in real conditions of practice of the profession, what they have been taught during the theoretical and laboratory teaching at the Division of Dental Technology.

After the end of the internship, students will be able to:

• Know, plan and complete dental prosthetic tasks, collaborating with both fellow technicians and dentists, so they know which stages are of their responsibility and which of the dentist.

• come into contact with all the necessary materials and the corresponding instruments and devices required for the construction of high quality dental prosthetic work.

• know the structure and operation of dental laboratories, the social, economic and technological factors that affect working conditions

• actively participate in the processes and methods of production or provision of services.

• correlate the theoretical and laboratory knowledge acquired during the studies with the problems of the application areas as well as the contact of the Division of Dental Technology with the Dental Laboratories in order to create a two-way relationship between them.

General Competences	
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Autonomous work • Teamwork • Decision making • Work in an interdisciplinary environment • Search, analysis and synthesis of data and information, using the necessary technologies	

3. SYLLABUS

The Undergraduate Internship is performed in two two months in the last two semesters of study (G & H). Its completion will help to integrate graduates more quickly and directly into the labor market. During the Undergraduate Internship, the students deal with all the stages of the construction of the dental prosthetic work of both Mobile and Removable Prosthetics. In particular, they manufacture total and partial dentures, inlays, crowns and bridges, as well as metal-ceramic or all-ceramic prostheses. In cases where the laboratory has a high degree of specialization, students may also participate in the construction of prosthetic work on implants or maxillofacial prosthetic work. They also manufacture orthodontic equipment. During their practice, students deals with techniques such as the manufacture of plaster casts, the manufacture of wax models, the casting of metal frames, the manufacture of acrylic prostheses, the grinding and polishing of the prostheses, etc.

(3) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face,Distance learning ,etc.*	Working in a Dental Laboratory
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *UseofICTinteaching,laboratoryeducation, communicationwithstudents*	Use of electronic technology in communication with students

TEACHING METHODS *Themannerandmethodsofteachingaredescribed indetail.* *Lectures,seminars,laboratorypractice,fieldwork, studyandanalysisofbibliography,tutorials,placements,clinicalpractice,artworkshop,interactiveteaching,educationalvisits, project, essay writing, artistic creativity,etc.* *Thestudent'sstudyhoursforeachlearningactivity are given as well as the hours of non-directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	PRACTICE	150
	Course total	*150*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation,summativeorconclusive,multiplechoicequestionnaires,short-answerquestions,open-ended questions, problem solving, written work,essay/report,oralexamination,publicpresentation,laboratorywork,clinicalexaminationofpatient,artinterpretation,other* *Specifically-definedevaluationcriteriaaregiven, and if and where they are accessible tostudents.*	…. The Undergraduate Internship is carried out under the supervision of the Department's faculty members and is coordinated by the Internship Committee. The evaluation of the internship is done with the participation of all the members of its organization. The internship committee determines how the course is graded	

1.8 Division of Optics and Optometry – Courses outline

9.8.1 4th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4011-4012**	**SEMESTER**	4th
COURSE TITLE	OPTICAL AND OPTOMETRIC INSTRUMENTS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES + LABORATORY EXERCISES	4+2	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background, SBC/C
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course material aims at students' understanding of the principles of operation of the basic optical instruments, for use in daily practice in their professional career.

Upon successful completion of the course students will be able to:

•know the principles of operation of optical imaging instruments for the understanding of technological and scientific research methods in their subject.

• Be familiar with the use of various optical instruments

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Working independently
- Team work

(3) SYLLABUS

- Light propagation, wavefronts, rays, vergence, diopters, third-order lens aberrations
- Photometry (luminous flux, luminance, illumination, Lambert surfaces)
- Optical characteristics of optical instruments (stops - pupils - chief and marginal rays - numerical aperture – f number - angle of view, field of view).
- Image quality, optical resolution, spatial frequencies, modulation transfer function, point spread function
- Magnifier, oculars, Projection systems
- Microscopes, telescopes, binoculars, telemicroscopes, cameras - photographic lenses.
- Focimeter, keratometer, corneal topographer, slit lamp, optometer, retinoscope, ophthalmoscope

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	52
Laboratory practice	26
Study	102
Course total	*180*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Written final exam (50%)
Laboratory work (50%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

1. Visual Optics, Drakopoulos Panos and George Asimellis, pp 440, Syghroni Gnosi 2014
2. Geometrical Optics, Asimellis George, Vamvakas Ioannis, Panos Drakopoulos, pp281, Syghroni Gnosi, 2012
3. Visual Optical Instruments, Drakopoulos Panos and George Asimellis, pp 256, Syghroni Gnosi, 2011
4. Basic principles of Chromatometry, V. Orphanakos, Stamoulis Ed., 2004

5. Applied Optics, D. Zevgolis, Tziola Publ., 3rd edition, 2017

English

1. Introduction to Geometrcal Optics, M Katz,World Scientific, 2002
2. Handbook of Optics, M. Bass editor, Volumes I,II, III, McGraw-Hill Inc, 3rd edition, 2010
3. *Optical devices in Ophthalmology and Optometry, M. Kaschke, K. Donnerhacke, M.S. Rill, pp625, Wiley-VCH, 2014*
4. Optics, Blaker J.W., P. Schaeffer, an Introduction for Technicians and Technologists, Prentice-Hall, 2000
5. Optics, Hecht E., Addison Wesley, 4th Edition, 2001
6. The manual of photography, E. Allen and S. Triantaphillidou editors, 10th edition, Focal Press, 2011
7. Optometric Instrumentation, D.B. Henson, Butterworth-Heinemann, 2nd edition,1996
8. *Optics and Optical Instruments, Johnson B.K., Dover Publications, 1960*
9. Handbook of Applied Photometry, DeCusatis Editor, 1998
10. The light measurement Handbook, Ryer A., International light, 1997
11. Seeing the light, Falk D., Brill D., Stork D., John Wiley and Sons, 1986.
12. Geometrical Optics and Optical Design, Mouroulis P. and J. Macdonald, Oxford University Press, 1997
13. The eye and visual optical instruments, Smith G. and Atchison D.A. Cambridge University Press, 1997.
14. Modern optical engineering, Smith W.J., SPIE Press, Mc Graw Hill, 2000

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4021**	**SEMESTER**	4th
COURSE TITLE	EYE DISEASES		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures		3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background, SBC/C		

PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of the course the student will be able:

- to understand basic concepts of ophthalmology.
- To be familiar with ocular pathology and medical scientific thought.
- To be familiar with eye pathology topics and facts for understanding scientific research methods in objects related to the eye.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism

Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Production of free, creative and inductive thinking …… Others… …….
Working independently Team work.	

4. SYLLABUS

- Eyelids, eyelid position abnormalities, irritations and infections, parasites, injuries, signs and symptoms of eyelid pathology, Treatment
- Bulb, Tissues, Cysts, Irritations and Infections, Injuries, Signs and Symptoms of Bulb Disease, Treatment
- Tear system, signs and symptoms, Treatment. Tear drainage system, signs and symptoms, Treatment.
- Conjunctival irritations and infections, signs and symptoms, Treatment. Abnormalities, neoplasms, Treatment.
- Cornea, irritations and infections, injuries, signs and symptoms, Treatment.
- Keratoconus, malformations, Treatment.
- Iris and pupil, irritations and infections, injuries, stumps, signs and symptoms, malformations, Treatment

5. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Open E-Class in teaching	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures	**39**
	Study and analysis of bibliography, tutorials	**51**
	Course total	**90**
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)	

6. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- **GREEK**

1. Κλινική Οφθαλμολογία J Kanski – Παρισιανού, 2004
2. Οφθαλμολογία M Batterbury, B Bowling, Παρισιανού , 2003
3. Επίτομη Οφθαλμολογία Γ. Θεοδοσιάδης, Λίτσας, 1996

- **Foreign**

4. Ophthalmology – Frank W. Newell. – St. Louis : Mosby, 1996
5. Ophthalmology – Wybar, Kenneth Cullen, Kerr Muir, Philadelphia : Bailliθre Tindall, 1984
6. The Wills eye manual- office and emergency room diagnosis and treatment of eye disease. – Philadelphia : Lippincott, 1994

7. An atlas of ophthalmic trauma – An atlas of ophthalmic trauma / Thomas C. Spoor. – St. Louis : Mosby ; London : Martin Dunitz, 1997
8. Principles and practice of ophthalmology – Daniel M. Albert, Frederick A. Jakobiec. – Philadelphia : Saunders, 1994
9. Retina and vitreous – Jan L. Federmen … [et al.]. – London ; St. Louis : Mosby-Year Book, 1994
10. General ophthalmology – Daniel Vaughan, Taylor Asbury, Paul Riordan-Eva ; illustrated by Laurel V. Schaubert. – Norwalk, Conn. : Appleton & Lange, 1995

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4031-4032**	**SEMESTER**	4th
COURSE TITLE	OPHTHALMIC LENSES DISPENSING I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES & LABORATORY EXERCISES	4 + 3	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C
PREREQUISITE COURSES:	3062 OPTICAL MATERIALS OF OPHTHALMIC LENSES & HISTORY OF GLASS
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the students' understanding of the basic concepts of Ophthalmic Lens Technology and techniques and methods of their application in the spectacle frames in daily practices in their professional career. Upon successful completion of the course the student will be able to: understand basic concepts of Ophthalmic Lens Technology. Be familiar with problem solving and the application of Ophthalmic Lenses in a spectacle frame; know ways of dealing with problems and exercises of understanding technological and scientific research methods in the subject of Ophthalmic Lens Technology; Understand the execution of corrective prescriptions.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Working independently

Team work

(3) SYLLABUS

Introduction to the theory of ophthalmic lenses

Spherical lenses,

Lens Properties,

Spherical and astigmatic lenses,

Neutralization,

Measurement of power and curvature,

Refractive index,

Abbe number ratio and refractive index,

Conversions: spherical and toric, execution of spherical and spherical cylindrical recipe. Curvature - lens thickness

Optical laboratory equipment

Conversion applications: spherical and toric formulas,

Toric formulas conversion

Aspherical surface, aspherical lenses,

Anti-reflective-anti-scratch coatings.

Ophthalmic lens dyes,

Dispensing of refractive prescriptions.

Spectacles and ophthalmic lens materials

Pupillary Distance

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures,	52
Laboratory practice	39
Study and analysis of bibliography	89
Course total	*180*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Written final exam (50%)
Laboratory work (50%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek

"Ophthalmic lens I", Pateras Evangelos – Ion Publications, 2010, ISBN 978-960-697-039-9

English

1. Handbook of optics - sponsored by the Optical Society of America. - New York : McGraw-Hill, 1995-2001
2. Optics - M.H. Freeman. - Oxford: Butterworth-Heinemann, 1990
3. Schaum's outline of theory and problems of optics - by Eugene Hecht. - New York : McGraw-Hill, 1975

4. Fundamentals of optics - Francis A. Jenkins, Harvey E. White. - New York : McGraw-Hill, 1976
5. Modern optics - Robert D. Guenther. - New York ; Chichester : Wiley, 1990
6. Introduction to modern optics - by Grant R. Fowles. - New York : Dover Publications, 1989, 1975
7. Applied optics and optical design - A.E. Conrady ; [edited and completed by Rudolf Kingslake]. - New York : Dover, 1992
8. Introduction to classical and modern optics - Jurgen R. Meyer-Arendt. - Englewood Cliffs, N.J. : Prentice Hall, 1995
9. Contemporary optics for scientists and engineers - Allen Nussbaum and Richard A. Phillips. - Englewood Cliffs, N.J.: Prentice-Hall, 1976
10. Introductory university optics - J. Beynon. - London ; New York : Prentice Hall, 1996
11. Introduction to optics - Frank L. Pedrotti, Leno S. Pedrotti. - Englewood Cliffs, N.J. : Prentice-Hall International, 1993
12. System for ophthalmic dispensing - Brooks, Clifford W. - Boston : Butterworth-Heinemann, 1979
13. The principles of ophthalmic lenses - Jalie, M. - London : The Association of British Dispensing Opticians, 1994

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4041**	**SEMESTER**	4th
COURSE TITLE	INTRODUCTION TO OPTOMETRY		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
	Lectures	3	5
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C		
PREREQUISITE COURSES:	None		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	..		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of the course the student will be able:

- to understand basic concepts of eye refraction and basic Optometric concepts and terms.
- be familiar with the subjective refraction with visual acuity charts
- be familiar with the objective refraction with devices and optometric instruments.
- be aware of eye refraction issues and comprehension information
- to imply scientific research methods on objects related to clinical refraction.
- be familiar with the refractive condition of the eye and medicine scientific thinking

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Working independently

Team work.

(3) SYLLABUS

- Optotypes, operation and design. Remote and near vision tests,
- Visual acuity, Color vision charts and test cards.
- Ammetropies, symptoms, prevalence and correction.
- History records - Preliminary examination, Cover test, Eye movement control, Pupil reflex
- Basic knowledge of objective refraction - Refractometer, Keratometer- Skiascope
- Subjective refraction, Pinhole, Pendulum blur method, Cylinder, X-Cyl method
- Duochrome test - Exercises and practical applications

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Open E-Class in teaching

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	**39**
Study and analysis of bibliography, tutorials	**51**
Course total	**90**

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)

5. ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- **GREEK**

1. **Clinical refraction – Fotinakis V., Pateras E., Chandrinos A**., **-** Athens: Ellin Publ.**, 2000** ISBN

9789602864623

2. **Refraction-Basic Principles and Technique, Damanakis Alexandros** 2nd edition, Litsa Medical Publications, **1999.**

- **ENGLISH**

3. **Eye examination and refraction - R.J. Allen, R. Fletcher, D.C. Still.** - Oxford Blackwell Scientific, **1991**

4. **Clinical optics - Troy E. Fannin,** Theodore Grosvenor. - Boston : Butterworth- Heinemann, **1996**

5. **Bennett and Rabbetts' clinical visual optics** - Oxford ; Boston : Butterworth- Heinemann, **1998**

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4051**	**SEMESTER**	4th
COURSE TITLE	NEUROPHYSIOLOGY OF THE EYE		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES		3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C		
PREREQUISITE COURSES:	3052 ANATOMY OF THE EYE		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		

COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

LEARNING OUTCOMES

The aim of the course is students' understanding of the human eye neurology but also more specialized neurophysiology issues related to their professional career. Upon successful completion of the course the student will be able to:

• understand basic concepts of ocular neurology

• know subjects of neurophysiology and data for the understanding of technological and scientific research methods in the subject of neurophysiology of the human eye

• be familiar with neurophysiology and scientific thought

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

Theoretical Part of the Course

IMAGE PERCEPTION: Structure and function of retinal neurons.

VISUAL PATHS IN LIGHTING CONDITIONS. Sensory system design principles

specialization in space

VISUAL PATHS IN DARK CONDITIONS. Speed sensitivity and adaptability of retinal neurons.

VISUAL PATHS IN SEMI-LIGHT CONDITIONS - spatial, temporal analysis of the retinal image

PHOTO RECEPTORS FUNCTION - Retina image color control - Retina organization - Nervous and visual limitations of visual acuity - Nervous image in the brain and image processing

VISUAL PERCEPTION

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures,	39
Study and analysis of bibliography	51
Course total	*90*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language

1. **Neuroscience** KandelE.R., SchwartzJ.H., JessellT.M., Πανεπιστημιακές Εκδόσεις Κρήτης, 2005

2. **Internal vision** Zeki Semir Πανεπιστημιακές Εκδόσεις Κρήτης, 2005

Foreign language

3. **Eye, BrainandVision;** DavidH. Hubel, Scientific American Library, N.Y. 1995
4. **From Neuron to Brain,** Nichols J.G., Martin A.R.,Wallace B.G., Sinnauer Ass., Sunderland Mass., USA, 1992
5. **Neurons in the retina**., Kuffler S.W., Cold Spring Harbor Symposia in Biology 17:281-282 ,1952
6. **Foundations of Cyclopean Perception,** Julesz Bela, University of Chicago Press, Chicago 1971
7. **Outlines of a Theory of the Light Sense**, Hering, Ewald, Harvard University Press, Cambridge, Mass., 1964
8. **Genes for colour Vision**, Nathans J., Sci. Am. 260 :42-49 ,198
9. **The developing Brain**, Shatz C. J., Sci. Am. 267 :60-67 ,1992
10. **Neurobiology: A Science in need of a Copernicus**.,Hubel, D.H., MIT Press, Cambridge. Mass.,pp 243 –260
11. **Physiology of the eye : an introduction to the vegetative functions /** Irving Fatt, Barry A. Weissman. - Boston : Butterworth-Heinemann, 1992
12. **The Wills eye manual** : office and emergency room diagnosis and treatment of eye disease. - Philadelphia : Lippincott, 1994
13. **Fundamentals of anatomy and physiology.** Applications manual / Frederic H. Martini, Kathleen Welch ; with William C. Ober, art coordinator and illustrator ; Claire W. Garrison, illustrator ; Ralph T. Hutchings, biomedical photographer. - Upper Saddle River, N.J. : Prentice Hall, 1998

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**4061**	**SEMESTER**	4th
COURSE TITLE	SYSTEMIC DISEASES OF THE EYE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**

LECTURES	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specific Background Course, SBC/C
PREREQUISITE COURSES:	3052 ANATOMY OF THE EYE
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

LEARNING OUTCOMES

The aim of the course is for students to understand the basic elements of systemic diseases in Ophthalmology but also more specialized issues related to eye pathology; to know the symptoms and lesions of the eye, arising from other systems of human body to the eye.

Upon successful completion of the course students will:

- understand basic concepts of systemic diseases in Ophthalmology
- be familiar with the pathology of systemic eye diseases and medical scientific thought
- be familiar with ocular pathology issues and data for understanding scientific research methods on objects related to the eye.
- know issues of systemic eye diseases and ways to interact with problems arising during his work

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

Theoretical Part of the Course

Introductory concepts of health - disease - prevention.–. Introductory concepts of immunity

General causes of diseases.

Symptoms with which the diseases are manifested

INFECTIOUS DISEASES, which cause systemic disease and manifestations from

Eye (eg tuberculosis, herpes, staph infection and other germs and viruses (eg CMV-AIDS)

Blood diseases. That General knowledge. Anemias - hemoglobinopathies infection,

hemolytic jaundice Diseases of white blood cells and platelets and how

the eye is involved

Respiratory diseases: General knowledge - about the most common respiratory diseases

Respiratory failure. Chronic Obstructive Pulmonary Disease (COPD). Bronchial asthma

Cancer lung – Oedema of the eyes,vena cava obstruction.

Circulatory diseases: and General knowledge. Cardiovascular risk factors.

Arteriosclerosis Arterial hypertension and eye lesions. Angina pectoris

insufficiency and how the eye is affected

Main diseases of the digestive system: General knowledge, reference to the most common

diseases and analysis such as (Peptic ulcer.-ileus cancer.)

Liver and biliary diseases (Jaundice, cirrhosis or, hepatocellular carcinoma, hepatitis)

Urinary tract diseases: General knowledge of urinary tract symptoms, and common diseases

Thyroid diseases and eye disease

Collagen and connective tissue diseases: General knowledge of Autoimmune diseases

And symptoms in the eye in Rheumatoid arthritis, Juvenile rheumatoid arthritis.

Seronegative arthritis. Ankylosing spondylitis.

Systemic lupus erythematosus Scleroderma. Etc. reference to arthritis-Gout or

Gout-Degenerative joint disease (Osteoarthritis).

Neurological diseases and syndromes (HORNER syndrome) affecting the eye (stroke-

myasthenia gravis.)-neoplasms.

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures,	39
	Study and analysis of bibliography	51
	Course total	*90*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. ΝΕΤΤΕR ΠΑΘΟΛΟΓΙΑ , Κωδικός Βιβλίου στον Εύδοξο: 13256980 , Έκδοση: 1η έκδ./2011, Συγγραφείς: Runge M., Greganti M.A., ISBN: 978-960-489-278-5, Τύπος: Σύγγραμμα, Διαθέτης (Εκδότης): BROKEN HILL PUBLISHERS LTD
2. Related academic journals: EYE and VISION ,New England journal of medicine ,Medscape

9.8.2 5th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5021**	**SEMESTER**	5th
COURSE TITLE	BINOCULAR VISION		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specific Background Course/ SBC/C		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	N/A		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The syllabus aims at familiarizing students with basic concepts of the binocular vision and orthoptics as well as the treatment of non orthophoric problems.

Upon successful completion of the syllabus the students will:

- Be able to understand basic concepts of binocular vision.
- Be comfortable with solving binocular vision problems and oculomotor disorders
- Be familiar with and understand the ways of examining the binocular vision
- understand basic concepts of orthoptics
- Be familiar with solving non orthophoric problems.
- Be able to know the application of orthoptic principles

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

1. Visual exercises for binocular dysfunction
2. Orthoptic treatment
3. Strabismus surgery
4. Orthoptic examination

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	39 hours
Self study	61 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Written assessment 50%
Practical assessment 50%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Στραβισμοί και οφθαλμοκινητικές διαταραχές Δαμανάκις Α., Θεοδοσιάδης Γ. Γουδί : Ιατρικές εκδόσεις Λίτσας, 1992.

Βασικές αρχές στραβισμού Θεοδοσιάδης Γ. , Δαμανάκις Α. Αθήνα : Ιατρικές εκδόσεις Λίτσας, 1981 Ξενόγλωσση

Clinical procedures for ocular examination Nancy B. Carlson Stamford, Conn : Appleton & Lange, 1996

Visual perception Steven H Schwartz –Norwalk Appleton & Lange, 1994

Binocular vision and ocular motility – theory and management of strabismus/ Gunter K von Noorden –St Louis: Mosby, 1996

Binocular anomalies - diagnosis and vision therapy / John R Griffin, J David Grisham

Oxford : Butterworth-Heinemann, 1995
Binocular vision anomalies - investigation and treatment/ David Pickwell Oxford : Butterworth- Heinemann, 1994
Binocular vision and orthoptics investigation and management / J W Bruce Evans, Sandip Doshi Oxford: Butterworth_ Heinemann, 2001
A systematic approach to strabismus Karlsson, V. C. 2nd ed. Thorofare, NJ : SLACK, 2009.
Pediatric ophthalmology and strabismus ,Strominger, M B. St. Louis, Mo. ; London : Mosby, 2008.
Strabismus, Billson, F. A. London : BMJ Books, 2003.
Clinical management of binocular vision : heterophoric, accommodative, and eye movement disorders Scheiman, Mitchell 4th ed.Philadelphia : Lippincott Williams & Wilkins, 2014.
Normal binocular vision : theory, investigation and practical aspects Stidwill, David Oxford : Wiley-Blackwell, 2011.

Relevant Journals

American Association of Paediatric Ophthalmology and Strabismus
American Orthoptic Journal
British Journal of Orthoptics
Optometry and Vision Science
Perception
Vision research

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5061**	**SEMESTER**	5th
COURSE TITLE	SAFETY AND HYGIENE IN WORK FOR OPTICIAN-OPTOMETRIST		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures		3	3
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specific Background Course/ SBC/C		
PREREQUISITE COURSES:			

LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand basic concepts of Safety at work place and application of basic rules of Hygiene in everyday practices of the profession.

Upon successful completion of the course, the students will be able:

- to understand basic concepts of Workplace Safety and hygiene measures
- to know ways to deal with security, Hygiene and safety problems at work
- to know the current measures both as employees and as employers

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

- Introduction to the concepts of Health & Safety and Industrial Hygiene
- Impact of work on health and health at work
- Legal framework for occupational safety
- Occupational hazards (definition classification, occupational risk assessment)
- Occupational accidents (definition, causes, prevention, reporting, statistics, costs)

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	39 hours
Self study	61 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Related academic journals:
2. ΕΓΧΕΙΡΙΔΙΟ ΕΠΑΓΓΕΛΜΑΤΙΚΗΣ ΥΓΕΙΑΣ , HARRINGTON ,
3. Sciences et techniques medico-sociales - Gassier, J. - Paris : Masson, 1995
4. Safety, health and welfare in the printing industry - Fairley, M. C. - Oxford Pergamon Press, 1968
5. Guide du responsable sanitaire en collectivites d'enfants - Harlay, Alain. - Paris : Masson, 1993
6. Hygiene - Heurt, M. Le. - Paris : Masson, 1995
7. Education sanitaire - Blateyron, Marie-Louise. - Paris : Les Editions Foucher, 1992Guide du responsable sanitaire en collectivites

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5010**	**SEMESTER**	5th
COURSE TITLE	VISUAL OPTICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims to understand the visual principles of operation of the human eye and the basic optical instruments Optometry for use in everyday practice in his professional career.

Upon successful completion of the course the student will be able to:

• Understand the visual principles of operation of the human eye and refractive errors

• Understand the wavefront aberrations in the eye

• Understand the metrics of vision

• Understand the principles of color vision and colorimetry

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Working independently • Team work	

(3) SYLLABUS

- Evolution of the eye in nature
- Optics of the eye, cornea and crystalline lens, accommodation range, pupil.
- axes – angles of the eye
- Paraxonic schematic eyes
- Retina and its structure, receptive fields
- Low-order ametropias (defocus-astigmatism), spectacle lens magnification
- Wave aberrations of the eye and image quality at the retina.
- Visual metrics (Visual acuity - contrast sensitivity)
- Color vision - Colorimetry.

(4) TEACHING and LEARNING METHODS- EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	52
Study	68
Course total	*120*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

1. Visual Optics, Drakopoulos Panos and George Asimellis, pp 440, Syghroni Gnosi 2014
2. Geometrical Optics, Asimellis George, Vamvakas Ioannis, Panos Drakopoulos, pp281, Syghroni Gnosi, 2012
3. Visual Optical Instruments, Drakopoulos Panos and George Asimellis, pp 256, Syghroni Gnosi, 2011
4. Optics and Supervision, George Asimellis, Syghroni Gnosi 2008.

5. Basic principles of Chromatometry, V. Orphanakos, Stamoulis Ed., 2004

English

6. Handbook of Optics, M. Bass editor, Volumes II, III, McGraw-Hill Inc, 3rd edition, 2010
7. Optics, Hecht E., Addison Wesley, 4th Edition, 2001
8. Optics of the Human Eye, Atchison D.A. and G. Smith, Butterworth –Heinemann, 2000.
9. *Seeing the light, Falk D., Brill D., Stork D., John Wiley and Sons, 1986.*
10. Optics, Freeman M.H., Butterworth – Heinemann, 10th Edition, 1990
11. Optometric Instrumentation, Henson D.B., Butterworth-Heinemann, 2nd Edition, 1996
12. Animal eyes, Lang M., Nilsson D., Oxford University Press, 2002.
13. The eye and visual optical instruments, Smith G. and Atchison D.A. Cambridge University Press, 1997.
14. Introduction to Geometrical Optics, Katz M., World Scientific Publishing Co, 2002
15. Geometric, Physical, and Visual Optics, Keating MP, Butterworth – Heinmann, 2002.
16. Human colour vision, Kaiser PK, Boynton RM, Optical Society of America, 1996
17. The science of colour, Shevell SK. Editor, Optical Society of America, 2003

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5031**	**SEMESTER**	5th
COURSE TITLE	OCULAR PHARMACOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	2	2
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO

COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims for students to understand the visual principles of operation of the human eye and the basic optical instruments of Optometry for use in everyday practice. It also aims at teaching students the administration of ophthalmic preparation and familiarizing them with basic elements of ophthalmic Drugs and Eye Drops as well as reactions and consequences. Reference is made to Pharmacology in relation to the Eye.

Upon successful completion of the course the students will be able to:

- understand basic concepts of ophthalmic administration and eye drops.
- know how to deal with problems
- carry out comprehension exercises and apply technological and scientific research methods

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking

Working in an interdisciplinary environment Production of new research ideas	…… Others… …….
• Working independently • Team work	

(3) SYLLABUS

- General principles of pharmacology.
- Absorption, distribution, metabolism, mechanisms action and excretion of drugs.
- Nutrient interactions and drugs: -
- Antiglaucoma,
- Mydriatic - Cycloplegic,
- Local anesthetics in pharmacology,
- Vasoconstrictors,
- Antiallergic -antihistamines,
- Corticosteroids,
- Anti-infectives,
- Diuretics,anti-inflammatory non-corticosteroids,
- Fibrinolytic enzymes, OTC preparations.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	26
Study	34
Course total	*60*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1.Φαρμακολογία, Συγγραφείς: K. Whalen, R. A. HARVEY, ISBN: 9789605830854 .

Theocharis Theocharides : BASIC PHARMACOLOGY

2.Φαρμακολογία, Συγγραφείς: Χανιώτης Φραγκίσκος, Κωδικός Βιβλίου στον Εύδοξο: 41955719 Έκδοση: 1η έκδ./2014 Διαθέτης (Εκδότης): Κ. & Ν. ΛΙΤΣΑΣ Ο.Ε.

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5041-5042**	**SEMESTER**	5o
COURSE TITLE	OPHTHALMIC LENSES DISPENSING II		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES & LABORATORY EXERCISES	4 + 3	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	4031-4032 OPHTHALMIC LENSES DISPENSING I
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the students' understanding of the specific concepts of Ophthalmic Lens Technology and techniques and methods of their application in the corrective spectacle frame in daily practices in their professional career.

Upon successful completion of the course students will be able to:

understand specific concepts of Ophthalmic Lens Technology

be familiar with problem solving and the application of Ophthalmic Lenses in a spectacle frame.

know ways of dealing with special problems and exercises of understanding technological and scientific research methods in the subject of Ophthalmic Lens Technology.

Understand the execution of special corrective prescriptions.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

Prisms. Definition, thin prism, deflection angle, angiometry, prism elements, use of prisms, decentralization, eccentric lenses.

Bifocal and triple lenses. Type and location of outbreak and prismatic problems from the Addition, Biplastic for children. Creation of "No-jump" of bifocals, execution of recipes with bifid.

Multifocal lenses, Progressive addition lenses, design methods, types of multifocal and behavior study, execution of multifocal prescription, application criteria and correction of refractive errors.

Aspherical lenses

Ophthalmic lens aberrations

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures,	52
Laboratory practice	39
Study and analysis of bibliography	89
Course total	*180*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (50%) Laboratory work (50%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek

"Ophthalmic lens II", Pateras Evangelos – Ion Publications, 2010, ISBN 978-960-697-040-5

English

1. Schaum's outline of theory and problems of optics - by Eugene Hecht. - New York : McGraw-Hill, 1975
2. Introductory university optics - J. Beynon. - London ; New York : Prentice Hall, 1996
3. Introduction to optics - Frank L. Pedrotti, Leno S. Pedrotti. - Englewood Cliffs, N.J. : Prentice-Hall

International, 1993
4. Handbook of optics - sponsored by the Optical Society of America. - New York : McGraw-Hill, 1995-2001
5. Fundamentals of optics - Francis A. Jenkins, Harvey E. White. - New York : McGraw-Hill, 1976
6. System for ophthalmic dispensing - Brooks, Clifford W. - Boston : Butterworth-Heinemann, 1979
7. Introduction to modern optics - by Grant R. Fowles. - New York : Dover Publications, 1989, 1975
8. Applied optics and optical design - A.E. Conrady ; [edited and completed by Rudolf Kingslake]. - New York : Dover, 1992
9. Introduction to classical and modern optics - Jurgen R. Meyer-Arendt. - Englewood Cliffs, N.J. : Prentice Hall, 1995

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**5051-5052**	**SEMESTER**	5o
COURSE TITLE	BASIC OPTOMETRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES & LABORATORY EXERCISES	4 + 3	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	4041 INTRODUCTION TO OPTOMETRY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the*

Qualifications Framework of the European Higher Education Area

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims to help students to understand the concepts, principles and techniques of Optometry and the application of basic clinical techniques and cases related to the control of vision and the correction of various ammetropies. It also aims to familiarize them with optometry and the ethics of healthcare.

Upon successful completion of the course students will be able to:

understand basic Optometric concepts and terms, and techniques

be familiar with the control of vision with subjective, and objective methods

know ways to control eye problems and the use of basic instruments of Optometry.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Working independently

Team work

(3) SYLLABUS

Schematic eye, and models of normal eyes by various researchers, Binocular vision, Optics for the control of distant and near vision, Visual acuity, Ammetropias and their symptomatology.

Methodology of vision control using basic Optometric devices and Subjective and Objective Refraction, so that students develop diagnostic reasoning skills.

In detail, the course material includes:

Anatomy and physiology

Ametropias and their symptoms

Basic principles of operation and use of Basic Optical Instruments (case, sconoscope, ophthalmoscope and mainly Direct Ophthalmoscopy & Indirect Ophthalmoscopy, tachometer, refractometer, slit lamp, tonometer)

Use of taxpayer in subjective refraction

Shading technique

Immediate Ophthalmoscopy & Indirect Ophthalmoscopy

Specialized tests for the control of far and near vision

Principles of Subjective Refraction (acidity tables, ametropia astigmatism, pendulum and cross cylinder, binocular balance)

Stereo vision

Basic Elements and Fundamentals of Recording Ophthalmic Findings

Neurophysiology of the eye

Working conditions of Optician - Optometrist - Ethics and medical confidentiality.

Studies and research in Optometry.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures,	52
Laboratory practice	39
Study and analysis of bibliography	89
Course total	*180*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (50%) Laboratory work (50%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek

1. "Optometry I", Pateras Evangelos – Ion Publications, 2010, ISBN 978-960-697-041-2
2. Clinical refraction, Fotinakis, Pateras, Chandrinos Ion Publications, 2000
3. Refraction, Damanakis Litsas Publications,1999.
4. Ophthalmology, Leydhecker Wolfgang, Litsas Publications 1997

English

1. Optometric Instrumentation, D.B. Henson, Butterworth- Heinemann 1996
2. Optometry, Keith Edwards, Richard Llewellyn, εκδόσεις London, Boston, Butterworths, 1988
3. Optics of the Human Eye, Atchison A. David, Smith George, 2nd edition, Butterworth-Heinemann, 2002.

4. Clinical Optics, Elkington AR and Frank H J, 2nd edition, Blackwell Scientific Publications, 1991.
5. Introduction to the optics of the Eye, Goss A. David and West W. Roger, Butterworth-Heinemann, 2002.
6. Optics and Refraction, a User-Friendly Guide, Miller David, 2nd edition, εκδόσεις Mosby, 1996.
7. Environmental vision, Interactions of the Eye, Vision and the Environment, Pitts G. Donald, Kleinstein N. Robert, Butterworth-Heinemann, 1993.
8. Ophthalmology Spalton J.H., Hitchings A., Hunter A. Paul, 2nd edition, Wolfe Publishing, 1994.

9.8.3 6th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**6021**	**SEMESTER**	6th
COURSE TITLE	GLAUCOMA AND PERIMETRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	3	5
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	..

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Upon successful completion of the course the students will be able:

- to understand the basic types of glaucoma
- be aware of the risk factors for glaucoma and recognize screening methods.
- to know the basic medicines used to assess the development of glaucoma.
- to possess the basic ways of treating glaucoma and to know how to monitor and assist in treatment
- to have knowledge of basic operating principles of perimeter
- to know the programs and strategies of different types of perimeters
- to evaluate the results of the perimeter using indicators and maps for the differential diagnosis of glaucoma
- to know data for the understanding of scientific methods of research about glaucoma.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Working independently

Team work.

(3) SYLLABUS

- Types of Glaucoma- Epidemiology- Prognosis and symptoms
- Intraocular pressure change and Angiography- Optical disc examination and differential diagnosis of glaucoma
- Glaucoma risk factors- Glaucoma treatment-
- Pharmaceutical and other therapeutic methods- Common pharmaceuticals treatments- Laser treatment- Surgical treatment
- Perimeter types- Sensitivity threshold and indicators - Programs and strategies- Statistics and algorithms in perimetry.
- Visual field test, relationship between functional and structural loss of sensitivity for monitoring disease progression.
- Perimeter printout results, Reliability Indicators, General Indicators and Probability maps- Statistical perimeter packages and algorithms.
- Studies and Research on the treatment and development of Glaucoma

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Open E-Class in teaching

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	39
Study and analysis of bibliography, tutorials	51
Course total	90

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- **GREEK**

1. **Glaucoma and Perimetry** ¨ **Dr. Aristidis Chandrinos**, ION Publications **2018**, ISBN 9789605082765

2. **Atlas of fluoroangiography & optical tomography (OCT) of macular degeneration and glaucoma - Papavassiliou E. -**

Razis L. - Gratsonidis A. University Studio Press Publications- Thessaloniki 2012,

3. **Ophthalmology 10: Glaucoma - American Academy of Ophthalmology, Paschalidis, 1996**

- **ENGLISH**

4. **Aspects of Automated Perimetry – *Dr.* Aris Chandrinos 2021-** LAP LAMBERT Academic Publishing

ISBN: 978-620-2-56290-4

5. **Glaucoma - A Garg**, Jaypee Brothers Medical Pub, **2010**

6. **Effective Perimetry – The Field Analyzer Primer**- 4th Edition – **Heijl A, - Patela V.M. – Bengtsson B.** – Carl Zeiss Meditec – **2012**.

7 **Glaucoma: Identification and Co-Management- D Edgar, A R Rudnika** –Butterworth –Heinemann Medical, **2007**

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**6041**	**SEMESTER**	6th
COURSE TITLE	LASER APPLICATIONS IN OPTOMETRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	NO

LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the principles and use of Lasers in daily practice in his professional career.

Upon successful completion of the course the students will be able to:

•know and understand the principles and applications of Lasers

• know the different types of Lasers and their properties.

• Understand issues and practices of using lasers in optometry and ophthalmology.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism

Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Production of free, creative and inductive thinking …… Others… …….
• Working independently • Team work	

(3) SYLLABUS

- Emission (spontaneous and stimulated) and absorption of radiation
- Basic principles of operation of Lasers. Population inversion- radiation amplification, gain, Oscillation modes
- Gas lasers, solid state lasers, semiconductor lasers
- Excime LASER.
- Safety of LASERs. Classification and applications. Medical effect on tissues - technical data of medical applications
- Diagnostic instruments based on lasers (confocal ophthalmoscope, polarimeter)
- LCI, optical coherence tomography (OCT)
- Use of lasers in eye treatment (systems based on photochemical interactions, photothermal interactions, photo-ablation, photodistruction with nanosecond pulses, plasma and femtosecond pulses

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	39
Study	51
Course total	*90*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

Visual Optics, Drakopoulos Panos and George Asimellis, pp 440, Syghroni Gnosi 2014

Geometrical Optics, Asimellis George, Vamvakas Ioannis, Panos Drakopoulos, pp281, Syghroni Gnosi, 2012

Visual Optical Instruments, Drakopoulos Panos and George Asimellis, pp 256, Syghroni Gnosi, 2011

Applied Optics, Zevgolis D., 3rd edition, Tsiola Edit, pp696, 2016.

Medical Lasers, Science and clinical applications, Carruth JA, McKenzie A., pp 428, S. Athanasopulos Publ, 1994

English

Optics, Hecht E., Addison Wesley, 4th Edition, 2001
The light measurement Handbook, Ryer A., International light, 1997
Optical devices in Ophthalmology and Optometry, M. Kaschke, K. Donnerhacke, M.S. Rill, pp625, Wiley-VCH, 2014
Lasers: theory and practice / John Hawkes, Ian Latimer New York : PrenticeHall, 1995
Introduction to lasers and their applications / DC. O'Shea, W. Callen, and WiT. Rhodes,Addison-Wesley Pub. Co., 1977
Therapeutic lasers: theory and practice / G. Baxter, C Diamantopoulos, S O'Kane, T. D Shields, Churchill Livingstone, 1994
Laser surgery in ophthalmology: practical applicalications / edited by T A. Weingeist, Appleton & Lange, 1992
UV lasers : effects and applications in materials science / W.W. Duley Cambridge University Press, 1996
Excimer lasers in ophthalmology : principles and practice /. McGhee, Charles N. J. London : Dunitz, 1997
Step by Step Laser in Ophthalmology, Bikas Bhattacharyya, pp247, Jaypee Bros Medical Publishers,2009

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**6031-6032**	**SEMESTER**	6th
COURSE TITLE	CONTACT LENSES I		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES & LABORATORY EXERCISES	4+2	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C

PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The syllabus aims for students to understand basic principles of contact lenses and Fitting of basic types of contact lenses for the correction of the ametropic eye. It also aims at students' understanding of basic scientific principles related to the fitting of the contact lens and skills for clinical decision-making during preliminary stages of contact lens evaluation.

Upon completion of the syllabus the students will:

- understand the basic concepts of contact lens
- demonstrate practical skills for assessing their patients' suitability for the use of contact lenses
- demonstrate practice skills in recognition, control and description of the contact lens ordering process
- demonstrate knowledge of the material characteristics of contact lenses and contact lens solutions
- demonstrate clinical dexterity in handling contact lenses
- demonstrate basic clinical decision-making skills during interpretation evaluation of the elements and their implications for lens selection contact and their fitting
- describe the effect of the anterior eye anatomy and physiology during the use of contact lenses and the influence of the contact lens fitting on anterior structures
- describe the optical principles of soft and hard lenses and their implications for fitting
- understand scientific research methods in clinical fitting of contact lenses
- be familiar with contact lenses and medical science thinking concerning them

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these

appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

History of contact lenses,

Contact lens materials, specifications, material characteristics,

Contact lens manufacturing methods,

Optical characteristics- Tolerances and quality control, confirmation of parameters,

radius measurement, interpretation of surface shape, power, thickness, percentage

hydrophilicity, wetting angle, oxygen permeability, surface quality,

Equipment for the application of contact lenses

Procedure for fitting soft contact lenses, Selecting a lens type

Soft contact lenses solutions

Monitoring-Complications

Toric contact lenses

Colored contact lenses

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	52 hours
Laboratory practice	26 hours
Self study	102 hours
Course total	*180 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 50% Practical assessment 50%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Πρακτικός οδηγός εφαρμογής φακών επαφής. ISBN: 978-960-603-090-1. ID Ευδόξου: 320231

Σκληροί και μαλακοί φακοί επαφής - Stein, Harold A. - Αθήνα : Ιατρικές εκδόσεις Λίτσας, 1983

Φακοί επαφής - Κολιόπουλος, Γιάννης. - Αθήνα : Παρισιάνος, 1997

Clinical Manual of Contact Lenses. Bennett ES, 4th edition Philadelphia : Wolters Kluwer/Lippincott Williams and Wilkins, 2013

Contact lens optics and lens design. Douthwaite. - W.A – 3 rd edition Oxford ; Boston : Butterworth-Heinemann, 2006-

Contact Lens Complications Efron, N 3rd edition Oxford : Saunders, 2012

Contact Lens Practice Efron ,N , 2nd edition Oxford ; Boston : ButterworthHeinemann, 2010. The Contact Lens Manual: A Practical Guide to Fitting Andrew Gasson, Judith Morris 4th revised edition Butterworth-Heinemann/ Elsevier Health Sciences 2010
Contact lenses -. Lowther, G.E. and Snyder. C.r - Boston : Butterworth-Heinemann, 1992
Contact Lenses ed Phillips AJ : 5 th edition Oxford : Butterworth-Heinemann, 2006
Contact lens problem solving – Bennet,t E.S.. - St. Louis : Mosby, 1995
Guide to contact lens fitting – Kastl, P. R. - Boston : Blackwell Scientific Publications, 1992

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**6051-6052**	**SEMESTER**	6th
COURSE TITLE	ORTHOPTICS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES & LABORATORY EXERCISES	4 + 2	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the*

Qualifications Framework of the European Higher Education Area

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The syllabus aims at familiarizing students with basic concepts of the binocular vision and orthoptics as well as the treatment of non orthophoric problems.

Upon successful completion of the syllabus the students will:

- be able to understand basic concepts of binocular vision.
- be comfortable with solving binocular vision problems and oculomotor disorders
- understand the ways of examining the binocular vision
- understand basic concepts of orthoptics
- be familiar with solving non orthophoric problems.
- know the application of orthoptic principles

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently

Team work

(3) SYLLABUS

1. The muscles of the eye and their movements
2. Binocular vision, level of binocular vision, development of binocular vision,
3. stereoscopic vision, stereograms,
4. Retinal correspondence, matching, horopter, Panum space
5. Accommodative convergence
6. Binocular dysfunction and sensory abnormalities, eccentric focus
7. Classification of strabismus: phories heterophories, tropies
8. Amblyopia, clinical investigation, treatment
9. Tests for binocular vision
10. Test methods for strabismus
11. Classification of strabismus: phories heterophories, tropies
12. Types of strabismus: aetiology, diagnosis and treatment
13. Visual practice for binocular dysfunctions
14. Orthoptic treatment
15. Strabismus surgery

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	39 hours
Laboratory practice	26 hours
Self study	85 hours
Course total	*150 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 50% Practical assessment 50%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Στραβισμοί και οφθαλμοκινητικές διαταραχές Δαμανάκις Α., Θεοδοσιάδης Γ. Γουδί : Ιατρικές εκδόσεις Λίτσας, 1992.

Βασικές αρχές στραβισμού Θεοδοσιάδης Γ. , Δαμανάκις Α. Αθήνα : Ιατρικές εκδόσεις Λίτσας, 1981 Ξενόγλωσση

Clinical procedures for ocular examination Nancy B. Carlson Stamford, Conn : Appleton & Lange, 1996

Visual perception Steven H Schwartz –Norwalk Appleton & Lange, 1994

Binocular vision and ocular motility – theory and management of strabismus/ Gunter K von Noorden –St Louis: Mosby, 1996

Binocular anomalies - diagnosis and vision therapy / John R Griffin, J David Grisham Oxford : Butterworth-Heinemann, 1995

Binocular vision anomalies - investigation and treatment/ David Pickwell Oxford : Butterworth- Heinemann, 1994
Binocular vision and orthoptics investigation and management / J W Bruce Evans, Sandip Doshi Oxford: Butterworth_ Heinemann, 2001
A systematic approach to strabismus Karlsson, V. C. 2nd ed. Thorofare, NJ : SLACK, 2009.
Pediatric ophthalmology and strabismus ,Strominger, M B. St. Louis, Mo. ; London : Mosby, 2008. Strabismus, Billson, F. A. London: BMJ Books, 2003.
Clinical management of binocular vision : heterophoric, accommodative, and eye movement disorders Scheiman, Mitchell 4th ed.Philadelphia : Lippincott Williams & Wilkins, 2014.
Normal binocular vision: theory, investigation and practical aspects Stidwill, David Oxford: Wiley-Blackwell, 2011.

Relevant Journals

American Association of Paediatric Ophthalmology and Strabismus
American Orthoptic Journal
British Journal of Orthoptics
Optometry and Vision Science
Perception
Vision research

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**6011-6012**	**SEMESTER**	6th
COURSE TITLE	CLINICAL OPTOMETRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES & LABORATORY EXERCISES	4 + 3	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C
PREREQUISITE COURSES:	5051-5052 Basic Optometry
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek

IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims for students to understand the specialized concepts and principles of Optometry and the application of more specialized clinical techniques related to the control of vision and the correction of various metropolitanities as well as the control of the fundus of the eye.

Upon successful completion of the course the students will be able to:

understand specialized Optometric concepts and terms.

be familiar with vision control with specialized subjective and objective techniques.

know specialized ways of controlling the fundus of the eye and the problems that may occur as well as the terminology of their recording

become familiar with special imaging techniques of the eye

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism

Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

Specialized methodology of vision control using specialized Optometric devices, so that students can develop diagnostic reasoning skills.

In detail, the course material includes:

Principles of operation and use of specialized Optometric instruments (retinoscope, ophthalmoscope, corneal phoropter, refractometer, slit lamp, tonometer, corneal topography)

Slit lamp techniques

Corneal tomography - Maps - Analysis - Keratoconus

Gonioscopy

Tonometry

Optical coherence tomography of the anterior and posterior part of the eye OCT

Wave front analyzers

Amblyopia - Treatment – Light Adaptation

Fluoroangiography - OCT angio

Biometry (Ascan - Bscan)

Synoptophor

Specialized tests for control and quality of vision

Stereo vision

Colored vision

Introduction to the visual fields - perimetery

General knowledge of ophthalmic surgeries LASIK - Cataract

Clinical case studies and research in Optometry.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face In classroom	
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Learning process support through the electronic platform e-class	
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	***Activity***	***Semester workload***
	Lectures,	52
	Laboratory practice	39
	Study and analysis of bibliography	89
	Course total	*180*
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written final exam (50%) Laboratory work (50%)	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek

1. "Optometry II", Pateras Evangelos – Ion Publications, 2010, ISBN 9789606970429
2. Clinical refraction, Fotinakis, Pateras, Chandrinos Ion Publications, 2000
3. Refraction, Damanakis Litsas Publications,1999.
4. Ophthalmology, Leydhecker Wolfgang, Litsas Publications 1997

English

1. Optics of the Human Eye, Atchison A.D., Smith G., 2nd edition, Butterworth-Heinemann, 2002.

2. Clinical Optics, Elkington A.R. and Frank H.J., 2nd edition, Blackwell Scientific Publications, 1991.

3. Introduction to the optics of the Eye, Goss A. David and West W. Roger, Butterworth-Heinemann, 2002.

4. Optics and Refraction, a User-Friendly Guide, Miller David, 2nd edition, εκδόσεις Mosby, 1996.

5. Environmental vision, Interactions of the Eye, Vision and the Environment, Pitts G. Donald, Kleinstein N. Robert, Butterworth-Heinemann, 1993.

6. Ophthalmology Spalton J.H., Hitchings A., Hunter A. Paul, 2nd edition, Wolfe Publishing, 1994.

7. Optometric Instrumentation Henson, D.B. Butterworth- Heinemann ,1996.

8. Optometry, Keith Edwards, Richard Llewellyn, εκδόσεις London, Boston, Butterworths, 1988

9. Clinical Ophthalmology: A Systematic Approach: Expert Consult: Online and Print", 7e (Expert Consult Title: Online...by Jack J. Kanski and Brad Bowling FRANZCO (May 16, 2011)

10. The Ophthalmic Assistant: A Text for Allied and Associated Ophthalmic Personnel: Expert Consult - Online and Print.. Harold A. Stein, Raymond M. Stein and Melvin I. Freeman (Aug 29, 2012)

11. The Wills Eye Manual: Office and Emergency Room Diagnosis and Treatment of Eye Disease Adam T. Gerstenblith and Michael P. Rabinowitz (Mar 19, 2012)

9.8.4 7th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	7011-7012	**SEMESTER**	7th
COURSE TITLE	SPECIAL OPTOMETRIC INVESTIGATIVE TECHNIQUES		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES + LABORATORY EXERCISES	4 + 2	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C
PREREQUISITE COURSES:	6011 -6012 CLINICAL OPTOMETRY
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	..

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course material aims at students' understanding of specialized concepts of Optometry and the application of more specialized clinical techniques on eye examination.

Upon successful completion of the course the students will be able to:

- understand basic concepts of optical eye control.
- be familiar with devices and optometric instruments for eye investigation
- know ways of preoperative eye examination and emergency incidents that may occur

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

Working independently

Team work.

(3) SYLLABUS

- Slit lamp techniques for optometric eye investigation.
- Direct and indirect lighting techniques
- Van Herick anterior chamber angle evaluation technique
- Smith's anterior chamber angle assessment technique and its modification
- Optical disc control technique with Volk lenses
- Anterior chamber angle control methodology (angulation)
- Corneal topography
- Methodology of interpretation and recording visual fields.
- Perimetry, reading results and diagnosis
- Optical coherence tomography (OCT)
- Methodology for stereoscopic and color vision evaluation
- Biometric eye test (Axial measurements, caliper)
- Preoperative optometric examination for refractive surgeries
- Ophthalmic emergencies First aid

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Use of Open E-Class in teaching, laboratory education

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	52
Laboratory practice	26
Study and analysis of bibliography, tutorials	102
Course total	180

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	II. Written final exam (50%) II Laboratory exercises (50%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
- **GREEK**

1. **Investigative Techniques in Optometry - Dr. Aristidis Chandrinos**, ION Publications **2012** ISBN 978-960-508-053-2,

2. **Refraction-Basic Principles and Technique**, **Damanakis Alexandros**, 2nd edition, Litsa Medical Publications, **1999**.

- **ENGLISH**

3, **Optometry, Keith Edwards**, Richard Llewelly Publications, London_Boston, Butterworths, **1988**

4. **Optics and Refraction, a User-Friendly Guide, Miller David**, 2nd edition, Mosby, **1996**.

5 **Optometric Instrumentation - Henson, D.B.** , Butterworth- Heinemann **1996**.

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**7021-7022**	**SEMESTER**	7th
COURSE TITLE	CONTACT LENSES II		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES + LABORATORY EXERCISES		4+2	7
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C		
PREREQUISITE COURSES:	6031-6032 CONTACT LENSES I		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	N/A		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The syllabus aims at students' understanding of special types of contact lenses and their fitting for the correction of refractive errors of the eye.

Upon completion of the syllabus the students will:

- Be able to understand basic principles of fitting of contact lenses
- Be comfortable with solving problems with the fitting of contact lenses
- Be familiar with research methods in the field of clinical contact lens fitting
- Be familiar with the fitting of contact lenses and scientific medical knowledge

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently

Team work

(3) SYLLABUS

RGP contact lenses: Materials – Designs -Optical Characteristics-Evaluation of fitting - Modification of parameters of RGP RGP torics and bi-torics Evaluation of fitting Scleral haptic lenses Evaluation of fitting Correction presbyopia Bifocals, diffractive, multizones, multifocals monovision Keratoconus, selection of contact lens , soft keratoconic, rgp keratoconic, hybrid , scleral, piggyback Therapeutic lenses postoperative Special contact lenses (orthokeratology, for children, cosmetic, prosthetic)

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	52 hours
Laboratory practice	26 hours
Self study	102 hours
Course total	*180 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 50% Practical assessment 50%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Πρακτικός οδηγός εφαρμογής φακών επαφής. ISBN: 978-960-603-090-1. ID Ευδόξου: 320231

Σκληροί και μαλακοί φακοί επαφής - Stein, Harold A. - Αθήνα : Ιατρικές εκδόσεις Λίτσας, 1983

Φακοί επαφής - Κολιόπουλος, Γιάννης. - Αθήνα : Παρισιάνος, 1997

Φακοί επαφής Κατσούλος ,Κ , Μακρυνιώτη ,Δ. Αθήνα: Σύγχρονη Γνώση, 2010

Manual of gas permeable contact lenses Bennett, E.. 2nd ed.St. Louis : B-H, 2004.

Contact Lenses A-Z Efron, N. Oxford ; Boston : Butterworth-Heinemann, 2002.

Clinical manual of specialized contact lens prescribing Scheid, T. R. Boston :

Butterworth-Heinemann, 2002.
Diagnosis, fitting and care of the keratoconus patient Zadnik K. , . Oxford : Butterworth-Heinemann, 1999.
The cornea : its examination in contact lens practice / ed Nathan Efron. Oxford : Butterworth-Heinemann, 2001
Keratoconus & keratoectasia : prevention, diagnosis, and treatment / ed.by Ming Wang Thorofare, NJ : SLACK, 2010

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**7031**	**SEMESTER**	7^{th}
COURSE TITLE	LIGHTING ENVIRONMENT AND VISION		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
LECTURES + LABORATORY EXERCISES	3 + 1	5
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*

and Appendix B

- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the principles of indoor and outdoor lighting and the ergonomics of vision in daily practices in their professional career.

Upon successful completion of the course the students will be able to:

- know and understand the principles and quantities of photometry
- be aware of the different types of light sources and the lighting properties of materials
- understand indoor and outdoor lighting issues and practices.
- understand the basic concepts of Ergonomics of Vision

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

- Working independently
- Team work

(3) SYLLABUS

Light, photometry, lighting calculations and measurements, sense of brightness and whiteness, color, color temperature, surface color, color rendering index, artificial light sources, lamps and luminaries, daylight.
Vision, eye adjustment, vision system capabilities
Lighting and Circadian system, lighting and work
Lighting and visual discomfort, approaches to improve visual comfort
Lighting and perception of space and objects
Specific lighting applications (offices, Industrial, escape, driving, retail, for the elderly)
Light and health, light pollution

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	39
Assignments	23
Study	58
Course total	*120*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

I. written final exam (80%)
II laboratory assignments (20%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

Visual Optics, Drakopoulos Panos and George Asimellis, pp 440, Syghroni Gnosi 2014
Geometrical Optics, Asimellis George, Vamvakas Ioannis, Panos Drakopoulos, pp281, Syghroni Gnosi, 2012
Visual Optical Instruments, Drakopoulos Panos and George Asimellis, pp 256, Syghroni Gnosi, 2011
Illuminating engineering, Topalis F, Oikonomou L, Kourtesi St., Tzolas Publications., pp 580, 2nd ed, 2016

Artificial Light Sources, S. Kitsinelis, S Parikou Ed., 2011
Basic principles of Chromatometry, V. Orphanakos, Stamoulis Ed., 2004
Lighting and Architecture, Kontorigas Th.., Ktirio Pub., 2006
Special Installations in Illumination Engineering, Touloglou S.,Ion Publish., 2007

English

Handbook of Optics, M. Bass editor, Volumes II, III, McGraw-Hill Inc, 3rd edition, 2010
Human factors in Lighting, R. Boyce, Taylor & Francis 2003
IESNA Lighting Handbook, David DiLaura, Kevin Houser, Richard Mistrick, Gary Steffy Editors, 10th edition, 2011
Optics, Blaker J.W., P. Schaeffer, an Introduction for Technicians and Technologists, Prentice-Hall, 2000
Optics, Hecht E., Addison Wesley, 4th Edition, 2001
The manual of photography, E. Allen and S. Triantaphillidou editors, 10th edition, Focal Press, 2011
Illumination engineering, Murdoch JB, Macmillan Publishing Company, 1985
Handbook of Applied Photometry, DeCusatis Editor, 1998
The light measurement Handbook, Ryer A., International light, 1997

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**7041**	**SEMESTER**	7th
COURSE TITLE	LOW VISION & LOW VISION AIDS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES + LABORATORY EXERCISES	2+2	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/ SC/C
PREREQUISITE COURSES:	N/A
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek

IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The syllabus addresses the main principles underlying low vision and the use of low vision aids. Upon completion of the syllabus the students will:

- Be able to understand basic principles of low vision aids (LVAs)
- Be comfortable with solving problems and the dispensing of LVAs in a frame
- Be familiar with solving problems
- Be familiar with research methods in the filed of low vision

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking ……

Production of new research ideas	Others… …….
Working independently Team work	

(3) SYLLABUS

Introduction to low vision, definition, losing vision, types of vision loss, social services, legal framework Measurement of visual acuity, contrast sensitivity, visual fields, Amsler chart Reduced colour vision, photoreceptor dystrophies, optic atrophy, magnification Training in the use of LVAs

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	26 hours
Lab	26 hours
Self study	38 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.

Lectures

Final written assessment 100%

Labs

Practical assessment 50%

Written assessment 50%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Βοηθήματα Χαμηλής Όρασης - Φωτεινάκης, Β. - Αθήνα : Ελλην, 1998
2. Primary low vision care- Rodney W. Nowakowski. - Norwalk, CT: Appleton & Lange, 1994
3. Low visual acuity- by Albert T. Dowie. - London : Association of British Dispensing Opticians, 1988
4. System for ophthalmic dispensing- Brooks, Clifford W. - Boston : Butterworth-Heinemann, 1979

5. The principles of ophthalmic lenses- Jalie, M. - London: The Association of British Dispensing Opticians, 1994

6. Optometric management of learning-related vision problems- Mitchell M. Scheiman, Michael W. Rouse. - St. Louis : Mosby, 1994 Diagnosis and management in vision care- edited by John F. Amos. - Boston: Butterworths, 1987

7. Vision and reading- edited by Ralph P. Garzia. - St. Louis: Mosby, 1996

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**7051**	**SEMESTER**	7^{th}
COURSE TITLE	ETHICS IN OPTICIAN -OPTOMETRIST		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	2	3
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background /SBC/C
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the*

Qualifications Framework of the European Higher Education Area

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the students' understanding of concepts of Ethics and basic rules of their profession as Opticians -Optometrists.

Upon successful completion of the course the students will be able:

• to understand basic concepts of Occupational Ethics.

• to know ways to deal with ethical problems and issues at their work.

• to be familiar with the basic rules of Ethics at their profession, as opticians-0ptometrists

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….

- Working independently
- Team work

(3) SYLLABUS

- The profession of Optician- Optometrist, Conditions for its practice,
- Prohibitions and punishments,
- Education and specializations,
- Restrictions on access to the profession,
- Legislation and obligations.
- Relationships with Funds and Banks.
- Restrictions and the assignment of responsibility.
- Professional Codes of Ethics.
- Professional solidarity.
- National, social, trade union and professional rules

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
Lectures	26
Study	34
Course total	*60*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	I. written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

In Greek

Ελληνόγλωσση

1. Ιατρικό δίκαιο, δεοντολογία και προβληματική - Επιβατιανός, Παναγιώτης Α. - Θεσσαλονίκη : University Studio Press, 1989

2. Η δεοντολογία των δημοσίων σχέσεων - Φερούσης, Δημήτρης Σ. - Αθήνα : Interbooks, 1988

3. Ηθική και δεοντολογία στην υγεία και τη νοσηλευτική - Μαργαριτίδου-Τυμπλαλέξη, Βασιλική. - Αθήνα : Ιατρικές εκδόσεις Λίτσας, 1993

4. Επιχειρησιακή δεοντολογία - Ζευγαρίδης, Σπύρος. - Θεσσαλονίκη : Κυριακίδης, 1990

5. Διοικητική δεοντολογία και πρακτική - Μαντάς, Νικόλαος Β. - Αθήνα : Σύγχρονη Εκδοτική, 1992

6. Βιβλίο [59395443]: ΒΙΟΗΘΙΚΗ, Ι.ΠΟΥΛΗΣ, Ε.ΒΛΑΧΟΥ

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**7061**	**SEMESTER**	7^{th}
COURSE TITLE	NEW TECHNOLOGIES IN OPTOMETRY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHIN GHOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Special background / SBC/C
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK

IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is the students' understanding of concepts of Ethics and basic rules of their profession as Opticians -Optometrists.

Upon successful completion of the course the students will be able:

- To know the OCT-Angio technology, where the high scan allows the study of blood vessels and blood circulation in the tissues of the eye, in a very short time and without the use of drugs.
- To know the use of algorithms in the processing of imaging images of diabetic retinopathy and the remote rapid diagnosis.
- To know the use of amniotic membrane cut in the shape of a contact lens, for the treatment of gingival process after surgeries or inflammation. Learn about Enchroma ocular lenses, which are given to people with color blindness (red or green) who separate the rays of color before they reach the eye.
- To be informed about the daily silicone contact lenses with a tiny sensor that transmits wirelessly to a recording device, carried by the user, the 24-hour change of the IOP of the eye.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
• Working independently • Team work	

(3) SYLLABUS

- **OCT-Angio technology, in a very short time and without the use of drugs.**
- **Use of algorithms in the processing of diabetic retinopathy photography**
- **Remote rapid diagnosis using internet and imaging program**
- **Use of amniotic membrane cut in the shape of a contact lens, to treat gingival process**
- **Use of Enchroma ocular lenses for color blindness Silicone daily contact lenses with tiny 24-hour intraocular pressure sensor**
- **Use of applications and applications on PC, tablets mobiles for control of acidity, refraction or exercise of the eye.**

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	In class
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	e-class

TEACHING METHODS	***Activity***	***Semester workload***
The manner and methods of teaching are described in detail. *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	Lectures	39
	Study	51
	Course total	*90*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	1. written final exam (100%)

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

English

Optical Devices in Ophthalmology and Optometry: Technology, Design Principles, and Clinical Applications: Dr. Michael Kaschke, Dr. Karl-Heinz Donnerhacke, Dr. Michael Stefan Rill – ISBN:9783527410682 – 2014

Optometry: Science, Techniques and Clinical Management: Keith H. Edwards Elsevier Health Sciences, ISBN 9780750687782, 2009

Investigative Techniques and Ocular Examination Sandip Doshi and William Harvey 1st Edition ISBN: 9780750654043 2002

9.8.5 8th Semester

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8011**	**SEMESTER**	8th
COURSE TITLE	THESIS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
		8
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for each student to research in depth, a topic of their speciality, to refer to bibliographic sources by gathering the necessary information, to study and draw their conclusions and, finally, to write their work.

The purpose of student research is to dig up and review the knowledge gained so far, to delimit and study a problem, to interpret a phenomenon or situation and to combine the above, depending on the subject and the student's ability to analyse, synthesise and logical processing of data. The most common approaches are the literature review, the experimental-research study, the investigation of various cases and the clinical-statistical studies. The intended objectives, with the elaboration of the diploma thesis are the following:

1. Enhancing the student's ability to deal with a problem.

2. The enhancement of learning, through the study and elaboration of one significant problem and the acquisition of new knowledge derived from the study.

3. Enhancing the student's ability to give a complete and correct solution to the problems that may arise.

4. The student's practice in seeking, exploring, choosing, using and recording data from bibliographic sources.

5. The student's practice in writing and presenting a text with data from bibliographic sources, without changing the meaning of the information obtained.

6. The student's training in the ability to write not just one thesis but any kind of text it needs to contain scientific thinking, presentation of positions and proposals, submission of new ideas and directions. In general, any kind of text, which serves the scientificism of its author and the promotion of their ideas and proposals.

Upon completion of the course the student will know to:

• Participate in a research team

• Compile and follow a research work protocol.

• Evaluate research findings

• draw conclusions from the research findings

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

The student, during the last semester of studies, prepares an undergraduate Thesis. The topic must be directly related to topics of his speciality in Optics and Optometry. The topics of the Undergraduate Thesis are proposed by the faculty members, who also undertake the supervision of the thesis. Upon completion of their work, the student presents it publicly in a three-member committee, which consists of faculty members of the Department. The presentation can be attended by other faculty members as well as students.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	At the end of the spring semester with a presentation at a three-member committee.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Thesis preparation, thesis writing	180
Course total	*180*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Public presentation The evaluation criteria based on which the grading is done by the three-member examination committee are: • Correctness and validity of the content of the work (60%) • Adequacy of bibliographic reports (15%) • Presentation (15%) • Innovative data and research perspectives (5%) • Correct use of the Greek Language (5%). Total 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

It is recommended by the supervisor, in collaboration with the student, depending on the subject of the research.

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8012**	**SEMESTER**	8th
COURSE TITLE	VISION PSYCHOLOGY		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specific Background Course/ SBC/CE
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is students' understanding of Psychology of Vision and their acquaintance with basic methods of perception of vision

Upon successful completion of the course the students will be able to:

- understand basic concepts of the Psychology of Vision.
- know ways of dealing with problems and issues of the Psychology of Vision.
- be familiar with the subject of Psychology of Vision.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

Introduction (Concept, objects and methods of Psychology). The evolution of psychology (Diachronic presentation of the scientific formation of Psychology. Psychology and its relation to the sciences of Man).

Learning- Memory- Thought- Intelligence. Concepts (Theories and pedagogical applications).

The Senses and the control of the mind. Explanation of stimuli and effect. The brain and nerves in the senses.

Vision as a psychological phenomenon, stimulus and stimulus transmission, optic nerves and brain lobes, visual chiasm, interpretation of the phenomenon of vision.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	

Activity	***Semester workload***
Lectures	39 hours
Laboratory practice	
Self study	61 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language
Introduction to psychology - Nasiakou, M. - Athens: Gutenberg, 2000
Ethics of research and practice in psychology- Wadeley, Alison. - Athens: Greek letters, 1995
Psychology of adaptation - Petroulakis, Nikolaos V. - Athens 1961
Evolutionary psychology- Kasiolas, E. - Athens, 1976
Psychology - Adler, Alfred. - Athens: Atlas, 1956;
Adolescent psychology - Manos, Costas G. - Athens: Grigoris, 1993
Applied clinical psychology in the field of health - Kalantzi - Azizi, Anastasia. - Athens: Greek letters, 1996
Foreign language

	Active Vision: The Psychology of Looking and Seeing (Oxford Psychology), John Findlay, Iain D. Gilchrist, Oxford University Press, 2003 Eye and Brain: The Psychology of Seeing, RL Gregory, Princeton University Press, 1997. Eye Brain and Vision, D.H. Hubel, W.H. Freeman and Company, NY, 1988 Foundations of Vision, B.A. Wandell, Sinauer Associates, Sunderland, 1995Pediatric ophthalmology and strabismus ,Strominger, M B. St. Louis, Mo. ; London : Mosby, 2008. Strabismus, Billson, F. A. London : BMJ Books, 2003. Clinical management of binocular vision : heterophoric, accommodative, and eye movement disorders Scheiman, Mitchell 4th ed.Philadelphia : Lippincott Williams & Wilkins, 2014. Normal binocular vision : theory, investigation and practical aspects Stidwill, David Oxford : Wiley-Blackwell, 2011. Relevant Journals American Association of Paediatric Ophthalmology and Strabismus American Orthoptic Journal British Journal of Orthoptics Optometry and Vision Science Perception Vision research

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8013**	**SEMESTER**	8th
COURSE TITLE	COMMUNICATION SKILLS		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background Course/ GBC/CE

PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The course aims for students to understand how crucial it is and how important communication is in providing a patient's eye care.

Upon successful completion of the course the students will be able to:

- communicate successfully with the patient.
- make the patient feel friendly and informed.
- offer the patient confidence and comfort in order to monitor their worries, fears and to show interest in the health of their eyesight.
- Ask the patient what they have noticed or how they feel and avoid words such as problem, injury or disease.
- Receive relevant information from the patient, including the conduct of clinical trials, recording the history.
- Receive from the patient a complete medical history with all ocular symptoms.
- Provide positive and optimistic relevant information to the patient, such as diagnosis, report findings and treatment advice.
- Be able to make information available to other collaborating vision professionals.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

- Reception of the patient (arrangement of the reception area, welcome, creating a climate of trust).
- Open discussion for any complaints and symptoms.
- Obtaining a general medical and ophthalmological history.
- Keep notes while taking history.
- Organizing and recording a series of exams or tests.
- Informing the patient about the findings by giving relevant advice.
- Update on bad (for their health) test results.
- Patient compliance with treatment.
- Time management and disengagement from a "talkative" patient.
- Closing discussion and saying goodbye.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	39 hours
Laboratory practice	
Self study	61 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language
Communication skills in Optometry - Dr. Aristides Chandrinou - Notes of the course - 2018
Foreign language
Clinical Communication Skills for Medicine, 4th Edition - Margaret Lloyd & Robert Bor & Lorraine M Noble Elsevier ISBN 9780702072130 - 2018
Professional Communications in Eye Care, by Ellen Richter Ettinger Butterworth-Heinemann; 1 edition ISBN: 978-0750693066 - (1994)Foundations of Vision, B.A. Wandell, Sinauer Associates, Sunderland, 1995Pediatric ophthalmology and strabismus, Strominger, M B. St. Louis, Mo. ; London : Mosby, 2008.

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8022**	**SEMESTER**	8th
COURSE TITLE	MARKETING		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background Course/ GBC/CE
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand the basic concepts of Marketing and Technical Sales, as well as the rules of development of small and medium enterprises.

Upon successful completion of the course the students will be able to:

- understand the basic principles and rules of Marketing and Technical Sales.
- become familiar with the methods and rules of Marketing and Technical Sales.
- know ways of solving Marketing problems and to use knowledge for the development of small and medium enterprises.
- Be able to make information available to other collaborating vision professionals.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently Team work	

(3) SYLLABUS

Importance of Marketing for the business. Detailed Marketing Methods-product life cycle. Competition analysis- Macroeconomic environment Analysis of consumer purchasing behaviour. Primary -Secondary elements. Questionnaire-Pilot analysis. Statistical data and processing. Conclusions-Applications

Product promotion. Applications of consumer theory. Production-cost function. Determination of the supply function. Perfect competition. Applications. Basic concepts of advertising. Production and advertising. Defining goals and measuring the results of advertising

Sales operation. Preparation -Planning- Problems and product distribution policy. Problems and product promotion policy. Problems and pricing and sales policy. Sales control. Legislation and market regulation Sales. Customer approach method. Sales strategy. Basic sales categories. Sales management.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	39 hours
Self study	61 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language
Retail sales technique- Mavrouleas, N. - Athens: Stamoulis, 1994
Sales Technique- Elvy, B. Howard. - Athens: Interbooks, 1979
Creative method for sales development- Magnisalis, K.G. - Athens: Interbooks, 1990
Retail sales development- Exadaktylos, Nikolaos. - Athens: Ellin, 1996
How to sell anything to anyone - Girard, Joe. - Athens: Anastasiadis, 1996
Salesman technique- Katsoulas, G. - Athens, 1974
Effective organization and sales management- Avlonitis, George I. - Athens: Stamoulis, 1997
Sales and sales management- Hisrich, Robert D. - Athens: Singular Publications, 1995

	Foreign language Marketing - Toussaint, J. C. - Athens: Pamisos, 1971 Strategic marketing management 1997-98- Paul Fifield and Colin Gilligan. - Oxford: Butterworth-Heinemann, 1997 Trade marketing strategies - Geoffrey Randall. - Oxford; Boston: Butterworth-Heinemann, 1994 Marketing plans - Oxford; Boston: Butterworth-Heinemann, 1999 Marketing ethics - Bodo B. Schlegelmilch. - London; Boston: International Thomson Business Press, 1998 Marketing plans - Malcolm H.B. McDonald. - Oxford; Boston: Butterworth-Heinemann, 1995

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8023**	**SEMESTER**	8th
COURSE TITLE	ACCOUNTING & INVOICING		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
	Lectures	3	4
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background Course/ GBC/CE		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	N/A		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand basic concepts of Costing and Pricing of products and services, as well as rules of Accounting for small and medium enterprises.

Upon successful completion of the course the students will be able to:

- understand the basic principles and rules of Accounting
- get acquainted with the methods and rules of Costing and Pricing of products and services.
- know ways of solving Accounting problems and to use knowledge of Costing and Pricing of products and services

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently

Team work

(3) SYLLABUS

Introduction to the basic accounting concepts and practices. Recording, keeping and displaying financial transactions of a company.
General principles, concept and distinctions of accounts. Books and facts. The diplographic system. General Accounting Plan. Calendar and General Journal. Balance sheet.
Valuation of assets, depreciation and analysis of financial statements. Cost and revenue centres. Sharing cost data. Establishment and solution of partnerships. In-house and out-of-account costing of products and services. Staff costs and payroll statements. Financial cost.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	39 hours
Laboratory practice	
Self study	61 hours
Course total	*90 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language

Labor economics and labor relations - Katsanevas, Theodoros K. - Athens: Stamoulis, 1997

Labor relations, working environment and productivity in Greece - A primary research / ELKEPA. - Athens: ELKEPA, 1990

Human relations at work - Georgopoulos, George D. - Athens: Economics, 1991

Cost theory - Direct costing, contribution costing, co-produced products, standard costing, dead center / Pangios, Giannis K. - Piraeus: Stamoulis, 1993

Costing - Accounting and off-balance sheet harmonized with: the Greek general accounting plan and the tax data code / Sakellis, Emmanouil I. - Athens: Vrykous, 1991

Warehouse - Costing - Based on the general accounting plan and the tax data code / Leontaris, Miltiadis K. - Athens: Pamisos, 1989

	Business Costing - Process - Methods - Systems / Kouleris, Anastasios P. - Athens, 1986 Pricing Policy Design - Mitchell, Eric G. - Athens: Criterion Publishing and Consulting Ltd., 1997 Foreign language Marketing logistics -Martin Christopher; with case study contributions by Helen Peck. - Oxford: Butterworth Heinemann on behalf of the Chartered Institute of Marketing, 1997 Fundamentals of logistics management - Douglas M. Lambert, James R. Stock, Lisa M. Ellram. - Boston: Irwin / McGraw-Hill, 1998 Logistics and supply chain management - Logistics and supply chain management: strategies for reducing costs and improving services / Martin Christopher. - London: Financial Times: Pitman Pub., 1992 Business logistics management - planning, organizing, and controlling the supply chain / Ronald H. Ballou. - Upper Saddle River, NJ Prentice Hall, 1999 Business logistics management - Business logistics management / Ronald H. Ballou. - Englewood Cliffs; London: Prentice-Hall, 1992 The logistics handbook - editors-in-chief, James F. Robeson, William C.Copacino; associate editor, R. Edwin Howe. - New York: The Free Press; Toronto: Maxwell Macmillan Canada; New York: Maxwell Macmillan International, 1994

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8024**	**SEMESTER**	8th
COURSE TITLE	COMMERCIAL & LABOR LAW		
INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
	Lectures	2	3
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialized general knowledge, skills development*	General Background Course: GBC/CE		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	N/A		

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of the course is for students to understand basic concepts of Commercial Law, as well as rules of interpersonal relations and Legitimacy at the Workplace.

Upon successful completion of the course the students will be able to:

- understand the basic principles and terms of Labour and Commercial Law.
- get acquainted with the methods and rules of labour relations.
- know the rules at the workplace and the methods of dealing with issues related to their profession

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently

Team work

(3) SYLLABUS

Elements of Commercial Law Commercial law. Merchant law. Business firm. Industrial enterprise.
Commercial companies.
Harmonization of Greek commercial law with the commercial law of the European Union
Elements of Labour Law, Individual and collective labour agreements. Employee remuneration.
Labour demands- trade union freedoms.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS

The manner and methods of teaching are described in detail.

Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	*Semester workload*
Lectures	26 hours
Self study	34 hours
Course total	*60 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

Greek language

Commercial law in practice - Velentzas, I.E. - Thessaloniki, 1992
Elements of commercial law - Serelea, Ga. - Athens: Modern Editorial, 1993
Law of commercial companies - Alexandridou, ED - Thessaloniki: Sakkoulas, 1995
Consumer protection law - Koutsoukis, D. V. - Athens: Sakkoulas, 1996
Free Competition Law - Koutsoukis, D. B. - Athens: Sakkoulas, 1996
Labor Law - Butter, SA - Athens: Anastasiou, 1986
Greek and Community Consumer Law - Delouka - Inglesi, K. - Athens: Sakkoulas, 1998

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS AND OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8021**	**SEMESTER**	8th
COURSE TITLE	CLINICAL PRACTICE		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
		10
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specialization Course/SC/C
PREREQUISITE COURSES:	None
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	..

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The Undergraduate Internship is performed in 4 months in the last semester of studies (8th). Its completion will help in the faster and more immediate integration of the graduate in the labor market. Its purpose is to offer students, before graduation, the opportunity to apply in practice and in real conditions of practice of the profession, what has been taught during the theoretical and laboratory teaching in the field of Optics & Optometry.

The Undergraduate Internship offers students of the Department of Optics & Optometry the acquisition of substantial contact with the real working environment of the optical companies, the modern private ophthalmology centers, and the ophthalmology clinics of public hospitals in order to apply their knowledge based on curriculum of the Department. The clinical internship is a course of the curriculum that brings students in direct contact with their future workplace and at the same time connects education with the productive actors of the field. The internship contributes to the better utilization of the knowledge and skills acquired by the students during their studies, and to the integration of the graduates in the production, and creates a two-way communication between the Department and the employment agencies. It is a way of connecting theory with practice.

The internship is carried out in selected bodies of the Public & Private sector such as optical companies and ophthalmological centers that are active in cognitive objects related to the scientific orientation of the Department of Optics & Optometry.

Students can be employed in companies with an object of employment completely related to that of the subject of the profession of an Optician- Optometrist (Optical stores- Ophthalmology centers- Ophthalmology clinics of public hospitals).

Upon completion of the Undergraduate Internship the students will be able to:

- establish optical stores, to be health managers of an optical store and in general to exercise all the applicable professional rights of Opticians
- fit contact lenses
- carry out, under the supervision of an ophthalmologist, objective and subjective eye examinations, with the aim of refractive examination of the eyes, tests of binocular function, tests for color vision and visual fields, as well as coarse control of eye health and the integrity of the eyes
- follow an ophthalmologist's prescription to dispense eyeglasses, low vision aids or other similar equipment, such as optometric or orthopedic exercise programs to acquire and improve visual impairments on a case-by-case basis.
- work in Public or private sector in any possible or emerging place of exercise of his professional rights.
  work in Public and private education.

General Competences Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?	
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environment Working in an interdisciplinary environment Production of new research ideas	Project planning and management Respect for difference and multiculturalism Respect for the natural environment Showing social, professional and ethical responsibility and sensitivity to gender issues Criticism and self-criticism Production of free, creative and inductive thinking …… Others… …….
Working independently	

(3) SYLLABUS

The Undergraduate Internship is performed in 4 months in the last semester of studies (8th). Its completion will help in the faster and more immediate integration of the graduate in the labor market.

During the Undergraduate Internship the students:

- take part in all stages of construction and dispensing of ophthalmic lenses in ophthalmic frames
- fit contact lenses
- perform, under the supervision of an ophthalmologist, objective and subjective eye examinations, with the aim of refractive examination of the eyes, tests of binocular function, tests of color vision and visual fields, as well as coarse control of eye health and the integrity of the eyes.
- execute an ophthalmologist's prescription to dispense eyeglasses, low vision aids or other similar equipment, such as optometric or orthopedic exercise programs to acquire and improve visual impairments on a case-by-case basis.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Work in Optical stores-Ophthalmology centers- Ophthalmology clinics of public hospitals
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS

Activity	***Semester workload***
CLINICAL PRACTICE	240
Course total	240

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	The Undergraduate Internship is carried out under the supervision of faculty members of the Department and is coordinated by the Undergraduate Internship Committee. The evaluation of the internship is done with the participation of all those involved in its organization. The Undergraduate Internship committee determines how the course is graded.

(5) ATTACHED BIBLIOGRAPHY

COURSE OUTLINE

(1) GENERAL

SCHOOL	HEALTH & CARE SCIENCES		
ACADEMIC UNIT	BIOMEDICAL SCIENCES		
DIVISION	OPTICS & OPTOMETRY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**8041**	**SEMESTER**	8th
COURSE TITLE	PRE-OPERATIVE ASSESSMENT		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures,laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialized general knowledge, skills development*	Specific Background Course/ SBC/C
PREREQUISITE COURSES:	N/A
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	N/A

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the*

Qualifications Framework of the European Higher Education Area

- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The syllabus aims to help the students understand pre-operative assessment and introduce them to basic checks. Upon completion of the syllabus the students will:

- Be able to understand and describe contemporary ophthalmic surgical techniques
- Describe the advantages and disadvantages of each ophthalmic operation
- ndicate appropriate operation for each patient
- Pay special attention on refractive surgery and the diagnostic assessments preceding these and the selection of patients, post-operative complications and specialist assessments taking place before operating

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma

Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information,	Project planning and management
with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and
Working independently	sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	……
Production of new research ideas	Others…
	…….

Working independently

Team work

(3) SYLLABUS

Refractive surgery for myopia, hyperopia and astigmatism (Lasik, Lasek, PRK, AK)
Intracroneal rings, IOLs, CLE, bioptics
Refractive surgery for presbyopia
Phacoemulsification
Introduction to strabismus surgery
Introduction to corneal transplantation (PKP, DALK, etc)
Introduction to retinal surgery
Introduction to oculoplastics

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face to face.
USE OF INFORMATION ANDCOMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	Delivery of the syllabus is supported by e-class.

TEACHING METHODS	***Activity***	***Semester workload***
The manner and methods of teaching are described in detail. *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS*	Lectures	52 hours
	Self study	98 hours
	Course total	*150 hours*

STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	**Lectures** Final written assessment 100%

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Refractive surgery Agarwal A, Agarwal A Jacob S , 2009, Jaypee Brother Publishers, ISBN 9788184484120
2. Cataract Surgery Steiner RF 2010 Elsevier Health Scieces, ISBN 9781416032250
3. Ophthalmic Surgical Procedures Hersh PS, ZagelBaum,BMCremers SL , 2009, Thieme, ISBN 9780865779808
4. Oculoplastic Surgery: The Essentials Pai-Dei Chen , 2001, Thieme ISBN 9781588900272