COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF HEALTH AND CARE SCIENCES		
ACADEMIC UNIT	Department of Biomedical Sciences		
SECTOR	Aesthetics and Cosmetics		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	8041	SEMESTER	8th
COURSE TITLE	LASER 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
Lecture	3	5
Laboratory exercise		
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*	OCSBC
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://moodle.uniwa.gr/course/view.php?id=2442

(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 at:

(a) to provide 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) to provide specialized knowledge and skills related to basic principles of protection and compliance with laser use safety rules

c) to familiarize 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.

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*

(3) 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.

(4) 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 *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 homeworks 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	70
Laboratory Exercise	20
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 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)

1. ΕΠΙΣΤΗΜΗ ΚΑΙ ΤΕΧΝΗ ΣΤΙΣ ΕΦΑΡΜΟΓΕΣ ΤΩΝ LASER ΚΑΙ IPL ΣΤΗΝ ΑΙΣΘΗΤΙΚΗ, ΠΑΠΑΔΟΠΟΥΛΟΣ ΙΩΑΝΝΗΣ Βιβλίο [50657514]
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. John Wilson and John Hawkes, Οπτοηλεκτρονική: μία εισαγωγή, Πανεπιστημιακές Εκδόσεις Ε.Μ.Π., Αθήνα 2007 (μετάφραση, Τρίτη αγγλική έκδοση).
6. Ιατρικά Lasers, Επιστήμη και Κλινική Εφαρμογή, Carruth J. A. S.,McKenzie A. L. μτφσ. Σεραφετινίδης Α., Μακροπούλου Μ. Βιβλίο Εύδοξος [45478]
7. Ι. Σιανούδης, Σημειώσεις "Laser: Αρχές λειτουργίας και βιολογικές εφαρμογές", Αθήνα 2006
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