COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	PHYSICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**220**	**SEMESTER**	**7**
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 TEACHING HOURS**	**CREDITS**
	4	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
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 provides advanced knowledge in topics of biophysics to the student. In particular, after completion of the course, the student will have:

- acquired the basic theoretical knowledge on biophysics, relevant to applications in Medical Physics.
- understood the function of modern technologies, methods, and applications that are (or will be) used in Research in Physical Therapy and clinical 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	*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

Thermodynamics of biological systems. Biological effects of ionizing and non-ionizing radiation. Theory of elastic and inelastic scattering of photons and electrons in matter. Spectroscopic techniques with biological applications (FTIR, Raman, X-ray Photoelectron Spectroscopy (XPS), Auger Electron Spectroscopy (AES)). Microscopy techniques applicable to materials of biological interest (Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM)). X-ray diffraction. Monte-Carlo simulations of electron orbits (Auger and photoelectrons) in biological materials. Laboratory exercises.

(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*	
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*	Written essay Oral examination Public presentation

Activity	***Semester workload***
Lectures	10
Study and analysis of bibliography	15
Project	25
Essay writing	25
Course total	***75***

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

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography: *- Related academic journals: Biophys. J., and others that are suggested by the teachers during the course*