

COURSE OUTLINE

1. GENERAL

SCHOOL			
DEPARTMENT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	APE814-2023	SEMESTER	8th Semester
COURSE TITLE	Medical Physics		
TEACHING ACTIVITIES If the ECTS Credits are distributed in distinct parts of the course e.g. lectures, labs etc. If the ECTS Credits are awarded to the whole course, then please indicate the teaching hours per week and the corresponding ECTS Credits.		TEACHING HOURS PER WEEK	ECTS CREDITS
		3	6.0
COURSE TYPE Background, General Knowledge, Scientific Area, Skill Development	Scientific Area		
PREREQUISITES			
TEACHING & EXAMINATION LANGUAGE:	Greek		
COURSE OFFERED TO ERASMUS STUDENTS:	NO		
COURSE URL:	https://eclass.emt.duth.gr/courses/PHYSICS235/		

2. LEARNING OUTCOMES

Learning Outcomes Please describe the learning outcomes of the course: Knowledge, skills and abilities acquired after the successful completion of the course.
The course provides an in-depth exploration of the scientific field of medical physics, where students will be taught: the interaction of radiation with matter, the production of isotopes for medical applications, the physics of diagnostic radiology, radiotherapy, nuclear medicine, and ultrasonography, the operating principles of medical imaging systems, as well as special topics in physics as applied to medicine. Finally, students will learn about the effects of radiation on biological systems. Upon successful completion of the course, the student will be able to: Understand medical terminology related to the field of medical physics

Combine a fundamental science (Physics) with the field of Medicine
Comprehend the basic principles underlying various medical specialties and one of the core components of medicine, which is diagnosis
Apply critical thinking

General Skills

Name the desirable general skills upon successful completion of the module

Search, analysis and synthesis of data and information,
ICT Use, Adaptation to new situations,
Decision making,
Autonomous work,
Teamwork,
Working in an international environment,
Working in an interdisciplinary environment, Production of new research ideas

Project design and management
Equity and Inclusion
Respect for the natural environment
Sustainability
Demonstration of social, professional and moral responsibility and sensitivity to gender issues
Critical thinking
Promoting free, creative and inductive reasoning

Search, analysis and synthesis of data and information, ICT Use
Working in an interdisciplinary environment
Production of new research ideas
Equity and Inclusion
Critical thinking

3. COURSE CONTENT

Interaction of radiation with matter
Production of isotopes for medical applications
Physics of:
a. Diagnostic Radiology
b. Radiotherapy
c. Nuclear Medicine
d. Ultrasonography
Operating principles of medical imaging systems, including:
Ultrasound scanners
Gamma cameras
Computed Tomography (CT) scanners
Positron Emission Tomography (PET) scanners
Magnetic Resonance Imaging (MRI) systems
Special topics in physics applied to medicine, such as:
Medical accelerators
Radiation detectors
Basic principles of radiation protection

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD Face to face, Distance learning, etc.	Face to face
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT)	Use of ICT in Teaching Use of ICT in Communication with students

Use of ICT in Teaching, in Laboratory Education, in Communication with students									
TEACHING ORGANIZATION The ways and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliographic research & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive learning, Study visits, Study / creation, project, creation, project. Etc. The supervised and unsupervised workload per activity is indicated here, so that total workload per semester complies to ECTS standards	<table> <tr> <th>Activity</th><th>Workload/semester</th></tr> <tr> <td>Lectures</td><td>110</td></tr> <tr> <td>Bibliographic research & analysis</td><td>40</td></tr> <tr> <td>Total</td><td>150</td></tr> </table>	Activity	Workload/semester	Lectures	110	Bibliographic research & analysis	40	Total	150
Activity	Workload/semester								
Lectures	110								
Bibliographic research & analysis	40								
Total	150								
STUDENT EVALUATION Description of the evaluation process Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Essay / Report, Oral Exam, Presentation in audience, Laboratory Report, Clinical examination of a patient, Artistic interpretation, Other/Others Please indicate all relevant information about the course assessment and how students are informed	Student evaluation languages Greek Method (Formative or Concluding) Summative Student evaluation methods Written Exam with Essay Development Questions Rate 100								

5. Suggested Bibliography

? Η Φυσική στη Βιολογία και την Ιατρική, Κωδικός Βιβλίου στον Εύδοξο: 77657097, Έκδοση: 2Η ΕΛΛΗΝΙΚΗ/2018 Συγγραφείς: Paul Davidovits ISBN: 978-960-583-420-3 Τύπος: Σύγγραμμα Διαθέτης (Εκδότης): ΠΑΡΙΣΙΑΝΟΥ ΑΝΩΝΥΜΗ ΕΚΔΟΤΙΚΗ ΕΙΣΑΓΩΓΙΚΗ ΕΜΠΟΡΙΚΗ ΕΤΑΙΡΙΑ ΕΠΙΣΤΗΜΟΝΙΚΩΝ ΒΙΒΛΙΩΝ
 ? Ιατρική Φυσική 2η έκδοση, Κωδικός Βιβλίου στον Εύδοξο: 32997826, Έκδοση: 2η έκδ./2013, Συγγραφείς: Γεωργίου Ε., Γιακουμάκης Ε., Δημητρίου Π., Καραϊσκος Π., Κόττου Σ., Λουίζη Α., Μαλαμίτση Ι., Παπαγιάννης Π., ISBN: 9789963716722, Τύπος: Σύγγραμμα, Διαθέτης (Εκδότης): BROKEN HILL PUBLISHERS LTD
 ? Επίτομη ιατρική φυσική, Κωδικός Βιβλίου στον Εύδοξο: 22755181, Έκδοση: 1η έκδ./2012, Συγγραφείς: Ψαρράκος Κυριάκος, Μολυβδά - Αθανασοπούλου Ελισάβετ, Γκοτζαμάνη - Ψαρράκου Άννα, Σιούντας Αναστάσιος, ISBN: 978-960-12-2092-5, Τύπος: Σύγγραμμα, Διαθέτης (Εκδότης): UNIVERSITY STUDIO PRESS - ΑΝΩΝΥΜΟΣ ΕΤΑΙΡΙΑ ΓΡΑΦΙΚΩΝ ΤΕΧΝΩΝ ΚΑΙ ΕΚΔΟΣΕΩΝ

Eudoxus

APE814-2023	"Ιατρική Φυσική	"	2024	8	Εαρινό	133151375	NAI	42034	Ιατρική
φυσική και ακτινοφυσική	Άννινος Φώτιος Α.					9789603946663	Παρισιάνου Α.Ε.	2010	1η
Σύγγραμμα	Μαλακό εξώφυλλο 17x24		146	4.85	OXI				
APE814-2023	"Ιατρική Φυσική	"	2024	8	Εαρινό	133151374	NAI	22755181	
Επίτομη ιατρική φυσική	Ψαρράκος Κυριάκος, Μολυβδά - Αθανασοπούλου Ελισάβετ, Γκοτζαμάνη - Ψαρράκου Άννα, Σιούντας Αναστάσιος		9789601220925	University Studio Press	2012	1η έκδ.	Σύγγραμμα		

Μαλακό εξώφυλλο	[21 x 29]	512	28.18	ΟΧΙ						
ΑΡΕ814-2023	"Ιατρική Φυσική"	"		2024	8	Εαρινό	133151376	ΝΑΙ	1183	
	ΑΚΤΙΝΟΔΙΑΓΝΩΣΤΙΚΗ	ΙΑΤΡΙΚΗ ΦΥΣΙΚΗ-ΒΙΟΙΑΤΡΙΚΗ ΤΕΧΝΟΛΟΓΙΑ					ΚΑΝΔΑΡΑΚΗΣ ΙΩΑΝΝΗΣ			
9789608976818	ΑΡΑΚΥΝΘΟΣ	2007	1	Σύγγραμμα			Μαλακό εξώφυλλο 21x29		354	18.89
ΟΧΙ										