

COURSE OUTLINE

1. GENERAL

SCHOOL			
DEPARTMENT	DEPARTMENT OF PHYSICS		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	APE720-2023	SEMESTER	7th Semester
COURSE TITLE	Bioengineering		
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:	YES		
COURSE URL:	https://exams.emt.ihu.gr/courses/PHYSICS241/		

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 serves as an introduction to the scientific field of Biomechanics, which is the application of the sciences of physics, mathematics, chemistry, computer science, engineering, etc., to living organisms with the aim of prevention, diagnosis, or treatment. The goal of the course is to understand and study the properties governing the functioning of the human body, with the ultimate purpose of solving problems faced by living organisms, particularly humans. Upon the successful completion of the course, the student will be able to: - combine physics with the functioning of living systems, - understand the field of Biomechanics, - apply critical thinking, - combine different physical principles within a system.

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

3. COURSE CONTENT

****Basic Principles of Biomechanics****
****Human Physiology****
****Bioelectric Phenomena****
****Biomaterials and Their Interaction with the Body****
****Mechanics of the Human Body****
****Biomechanics of Biofluids****
****Biomechanics of Biosolids****
****Biostatistics****

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, in Laboratory Education, in Communication with students	Use of ICT in Teaching Use of ICT 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 border="1"> <thead> <tr> <th>Activity</th><th>Workload/semester</th></tr> </thead> <tbody> <tr> <td>Lectures</td><td>5</td></tr> <tr> <td>Interactive learning</td><td>1</td></tr> <tr> <td>Total</td><td>6</td></tr> </tbody> </table>	Activity	Workload/semester	Lectures	5	Interactive learning	1	Total	6
Activity	Workload/semester								
Lectures	5								
Interactive learning	1								
Total	6								

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 English Method (Formative or Concluding) Summative Student evaluation methods Written Exam with Short Answer Questions Written Exam with Problem Solving Rate 80 20
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5. Suggested Bibliography

ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΕΜΒΙΟΜΗΧΑΝΙΚΗ, Κωδικός Βιβλίου στον Εύδοξο: 68375695, Έκδοση: 2/2017 Συγγραφείς: J.D. Humphrey, S.L.O'Rourke ISBN: 9789603307822 Τύπος: Σύγγραμμα Διαθέτης (Εκδότης): ΓΡΗΓΟΡΙΟΣ ΧΡΥΣΟΣΤΟΜΟΥ ΦΟΥΝΤΑΣ / Fundamentals of Bioengineering [electronic resource], Κωδικός Βιβλίου στον Εύδοξο: 80505918, Έκδοση: /2016, Συγγραφείς: Villadsen, ISBN: 9783527697441, Τύπος: Ηλεκτρονικό Βιβλίο, Διαθέτης (Εκδότης): HEAL-Link Wiley ebooks Bioengineering [electronic resource], Κωδικός Βιβλίου στον Εύδοξο: 73262026, Αριθμός τόμου: Έκδοση: /2015 Συγγραφείς: Mirjana Pavlovic ISBN: 9783319107981 Τύπος: Ηλεκτρονικό Βιβλίο Διαθέτης (Εκδότης): HEAL-Link Springer ebooks

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ΕΙΣΑΓΩΓΗ ΣΤΗΝ ΕΜΒΙΟΜΗΧΑΝΙΚΗ, Κωδικός Βιβλίου στον Εύδοξο: 68375695, Έκδοση: 2/2017 Συγγραφείς: J.D. Humphrey, S.L.O'Rourke ISBN: 9789603307822 Τύπος: Σύγγραμμα Διαθέτης (Εκδότης): ΓΡΗΓΟΡΙΟΣ ΧΡΥΣΟΣΤΟΜΟΥ ΦΟΥΝΤΑΣ / Fundamentals of Bioengineering [electronic resource], Κωδικός Βιβλίου στον Εύδοξο: 80505918, Έκδοση: /2016, Συγγραφείς: Villadsen, ISBN: 9783527697441, Τύπος: Ηλεκτρονικό Βιβλίο, Διαθέτης (Εκδότης): HEAL-Link Wiley ebooks Bioengineering [electronic resource], Κωδικός Βιβλίου στον Εύδοξο: 73262026, Αριθμός τόμου: Έκδοση: /2015 Συγγραφείς: Mirjana Pavlovic ISBN: 9783319107981 Τύπος: Ηλεκτρονικό Βιβλίο Διαθέτης (Εκδότης): HEAL-Link Springer ebooks