COURSE OUTLINE BIOCHEMISTRY OF EXERCISE

1. GENERAL

SCHOOL	PHYSICAL EDUCATION, SPORT SCIENCE AND OCCUPATIONAL THERAPY		
DEPARTMENT	PHYSICAL EDUCATION AND SPORT SCIENCE		
LEVEL OF STUDIES	ISCED level 6 – Bachelor's or equivalent level		
COURSE CODE	C065	**SEMESTER**	7th & 8th
COURSE TITLE	BIOCHEMISTRY OF EXERCISE		

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**
	2	3
Please, add lines if necessary. Teaching methods and organization of the course are described in section 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skill Development*	Background, Scientific Area
PREREQUISITES:	NO
TEACHING & EXAMINATION LANGUAGE:	GREEK
COURSE OFFERED TO ERASMUS STUDENTS:	NO
COURSE URL:	https://eclass.duth.gr/courses/KOM02163/

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.

Upon successful completion of the course, participants will be able to:

- *Explain immediate and long-term training responses and adjustments, respectively.*
- *consider the principles of exercise biochemistry when designing and implementing training sessions*
- *be familiar with the use of biochemistry in the design of long-term training plans*

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
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

Working in an interdisciplinary environment *Promoting free, creative and inductive reasoning* *Production of new research ideas*
• *Search, analysis and synthesis of data and information* • *Production of new research ideas* • *Decision making*

3. COURSE CONTENT

1. *Review of basic biochemistry, cellular structure and function, homeostatic regulation, and proteins*
2. *The biochemistry of muscle contraction.*
3. *Metabolic regulation during exercise, phosphagens metabolism during acute exercise*
4. *Carbohydrate metabolism during acute exercise*
5. *Lipid and protein metabolism during acute exercise*
6. *The coordination of energy substrates' metabolism during exercise*
7. *Biochemical adaptations of chronic exercise training*
8. *The biochemical profile of individual and team sports.*
9. *Exercise-induced muscle damage and inflammation*
10. *Practical applications of exercise biochemistry in training design.*
11. *Muscle hypertrophy mechanism*
12. *Genes and exercise*
13. *Biochemical monitoring of athletes*

4. LEARNING & TEACHING METHODS - EVALUATION

TEACHING METHOD *Face to face, Distance learning, etc.*	Face-to-Face, Distance Learning. Asynchronous distance learning will be used for file sharing and file exchange, and synchronous distance learning will be utilized for immersion courses beyond the conventional course hours.
USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY (ICT) *Use of ICT in Teaching, in Laboratory Education, in Communication with students*	Use of ICT in teaching, in communication with students • Digital slides • Videos • MsTeams/ e-class, webmail
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*	

Activity	***Workload/semester***
Lectures	26
Homework	21
Study and analysis of the literature	25
Exams	3
Totals	**75**

workload per semester complies to ECTS standards.	
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*	Homework (mandatory) 20% Intermediate exams though Eclass 20% Final written exams 60%

5. SUGGESTED BIBLIOGRAPHY

1. *Exercise Biochemistry (2020). Mougios Vassilis. Human Kinetics. ISBN: 9781492529040*
2. *Williams' Nutrition for Health, Fitness and Sport 12th Edition (2019). Raswon E., Branch D., Stepherson T. McGraw Hill. ISBN-10:1260258971*
3. *Sport Nutrition (2024). Juekendrup A., Gleeson M. Human Kinetics. ISBN: 9781718221703*

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	Chatzinikolaou Athanasios
Contact details:	Email: achatzin@phyed.duth.gr
Supervisors: (1)	YES
Evaluation methods: (2)	Homework (mandatory) 20% Intermediate exams though Eclass 20% Final written exams 60%
Implementation Instructions: (3)	The written assignment must be submitted via eClass by a specified date. The examination for the course will take place in sub-groups of eClass users, based on the number of participants, on the day of the examination as stated in the examination schedule released by the Secretariat. The exam will be conducted via Teams, and the link will be sent exclusively to the institutional accounts of those who have registered for the course and are aware of the distance learning conditions. Students must log in to the examination room using their institutional accounts; otherwise, they will not be able to participate. They are also required to have their cameras on during the exam. Before the exam starts, students must present their ID cards to the camera for identification purposes. Each student will need to answer multiple-choice questions, free text development questions, and critical commentary questions. Each

	question is scored between 0.25 and 1.0 points, depending on the category of the question.