COURSE OUTLINE SPORT BIOMECHANICS

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	C062	SEMESTER 7 th & 8 th		7 th & 8 th	
COURSE TITLE	SPORT BIOMECHANICS				
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	
COURSE TYPE Background, General Knowledge, Scientific Area, Skill Development	Scientific Area				
PREREQUISITES:	None				
TEACHING & EXAMINATION	Hellenic (Greek)				
LANGUAGE:	English for Erasmus+ students				
COURSE OFFERED TO ERASMUS STUDENTS:	YES				
COURSE URL:					

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 aim of the course is for students to understand:

- the biomechanical principles for training the various forms of athlete strength in order to maximize the performance of their musculoskeletal system;
- the biomechanical principles for the training of the technique of sports movements with full utilization of modern technology for the recording, evaluation and guidance of their execution; and,
- the basic biomechanical principles for the prevention and rehabilitation of sports injuries

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

- understand the biomechanical factors of athletic performance
- describe the mechanisms of muscle force production and transmission of these forces to the bones of body segments
- analyze the musculoskeletal torques and loads applied to the athlete during athletic movements,
- apply the basic methods for evaluating the strength of athletes and the technique of sport movements in the laboratory and on the field
- understand the effect of sports equipment on maximising sports performance

and preventing sports injuries

- decide on the required interventions through training for:
 - a) the optimization of the joint torques and loads in order to achieve the maximum possible performance of the musculoskeletal system with the minimum possibility of injury;
 - b) the application of the principle of specialization in training;
 - c) the improvement / modification of the athletes' technique according to their individual peculiarities;
 - d) the application of competitive loads in the training of technique.

General Skills

Name the desirable general skills upon successful completion of the module Search, analysis and synthesis of data and information, Project design and management ICT Use Equity and Inclusion Adaptation to new situations Respect for the natural environment Decision makina Sustainability Autonomous work Demonstration of social, professional and moral responsibility and sensitivity to gender issues Teamwork Working in an international environment Critical thinkina Working in an interdisciplinary environment Promoting free, creative and inductive reasoning Production of new research ideas

The general skills that are supported involve:

- Search, analysis and synthesis of data and information, using appropriate ICT
- 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
- Respect for the natural environment
- Promoting free, creative and inductive reasoning

3. COURSE CONTENT

- 1. Introduction the athlete as a machine
- 2. Biomechanical determinants of sport performance I
- 3. Biomechanical determinants of sport performance II
- 2. Laboratory methods for biomechanical analysis of sport movements
- 3. Biomechanical analysis of sports movements on the field
- 4. Biomechanical principles in strength training
- 5. Biomechanical principles in flexibility training
- 6. Biomechanical principles in endurance training
- 7. Biomechanical principles in technical training
- 8. Mechanical properties of sports equipment: training aids
- 9. Mechanical properties of sports equipment: sports instruments
- 10. Mechanical properties of sports equipment: footwear & protective

equipment

11. Lesson recap - project presentations

4. LEARNING & TEACHING METHODS - EVALUATION				
TEACHING METHOD	 Face to face 			
Face to face, Distance learning, etc.	 Theoretical lectures 			
	 Laboratory courses 			
	 Distance learning 			
USE OF INFORMATION &	Use of ICT in teaching and communication with			
COMMUNICATIONS TECHNOLOGY	students:			
(ICT) Use of ICT in Teaching, in Laboratory	 digital slides 			
Education, in Communication with students	– 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		
	Project	20		
	Study and analysis of the literature	26		
	Examinations	3		
workload per semester complies to ECTS standards.	Total Course	75		
STUDENT EVALUATION				
	1. Project – Presentatio	on in audience (30%)		
Assessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test,	2. Written exams inclue	ding: multiple choice		
Short Answer Questions, Essay Development	tests, short answer questions and development questions designed to solve			
Assignment, Essay / Report, Oral Exam,				
Presentation in audience, Laboratory Report,Clinical examination of a patient,Artistic interpretation, Other/Others	problems (70%)			
Please indicate all relevant information about	The assessment languages are Greek and English			
the course assessment and how students are informed	for Erasmus students			

5. SUGGESTED BIBLIOGRAPHY

- ENOKA, R. (2019). THE NEUROMECHANICS OF HUMAN MOVEMENT. ATHENS: I. KONSTANTARAS Publishing Co.
 KELLIS E. (2016). SPORT PLOMECHANICS, ATHENS: GREEK ACADEMIC ELECTRONIC POOL
- 2. KELLIS E. (2016). SPORT BIOMECHANICS. ATHENS: GREEK ACADEMIC ELECTRONIC BOOKS AND AIDS - "KALIPOS" REPOSITORY.

ANNEX OF THE COURSE OUTLINE

Alternative ways of examining a course in emergency situations

Teacher (full name):	Nikolaos Aggelousis
Contact details:	nagelous@phyed.duth.gr
Supervisors:	Yes
Evaluation methods:	Written or oral examination with distance learning methods, via eClass. Identification and monitoring of examinees through Microsoft Teams
Implementation Instructions:	The examination in the course will be done in randomly created groups of users (examinees). The compositions of the user groups will be announced in time. The total examination duration of each group will be 1 hour. In the first twenty minutes of each examination period, the examinees will be identified through the MS Teams app. For this purpose, there must be a camera, microphone and headphones connected to their terminal device (PC or smartphone). The relevant link will be sent via eClass, exclusively to the institutional accounts of those who have registered for the course and have accepted the terms of distance examination. For identification, students will display their student ID on camera when requested. The main examination will be carried out through the "Exercises" application of eClass. In particular, at the beginning of the second twenty minutes of each examination period, an exercise entitled "Examination-Group X (where X = 1 to N)" will be activated in the eClass, which will include 20 questions. The time limit for answering the 20 questions will be 30 minutes. During this period, all questions should be answered and finalized. Each of the questions will be graded with 0.5 points. Students should log in to the eClass platform through their institutional account. Also during the exam the camera and microphone of the examinees have to be continuously activated and the MS Teams application should be open.