DEMOCRITUS UNIVERSITY OF THRACE DEPARTMENT OF PHYSICAL EDUCATION & SPORT SCIENCE

UNDERGRADUATE PROGRAM OF STUDY

COURSE TITLE:								
Functional anatomy – Mechanics of motion								
COURSE CODE:	E.C.T.S. CREDITS							
N331		7						
RESPONSIBLE FOR T	HE COU	RSE:						
NAME	Vivia	Vivian Malliou						
POSITION	Assoc	Associate Professor						
SECTOR	Exerc	ise and	Health					
OFFICE	Rehat	Rehabilitation Lab Office						
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CO-INSTRUCTORS	Nikos	Aggelo	oussis, A	Associa	te Profe	essor		
SEMESTER: COURSE TYPE:	1 st 5 th Oblig Direc	[] [X] gatory	2^{nd} 6^{th}	[]	3 rd 7 th	[] [] [X]	$4^{ m th}$ $8^{ m th}$	[]
	Specialization[]Prerequisite for specialization[]Elective (open)[]							
HOURS (per week):	rd o Ath			2				
DIRECTION (<i>only for 5</i>	$\alpha 4 y \epsilon$	ear coui	ses):					
Exercise in Special Diseas	ses							
SPECIALIZATION (on	ly for 3 rd	& 4 th ye	ear coui	rses):				

LANGUAGE OF TEACHING:

Greek [X]

English []

AIM OF THE COURSE (content and acquired skills):

The aim of the course is to introduce students to: a) the different structures and the function of the musculoskeletal system, b) the mechanisms of several body segment movements, c) their interaction with the environment and d) the effects of various factors (exercise, injuries, etc.) on musculoskeletal system function.

COURSE CONTENTS (*outline – titles of lectures*):

- 1. Basic joint movements Limitations Range of motion.
- 2. Movement planes and terminology.
- 3. Type of muscle function.
- 4. Functional anatomy of the upper limb joints.
- 5. Functional anatomy of the lower limb joints.
- 6. Functional anatomy of the trunk joints.
- 7. Field application and intermediate assessment.
- 8. Musculoskeletal mechanics: introduction.
- 9. Musculoskeletal mechanics: bones.
- 10. Musculoskeletal mechanics: tendons and ligaments.
- 11. Musculoskeletal mechanics: muscles.
- 12. Joint forces and moments.
- 13. Biomechanical assessment of movements (lab).

TEACHING METHOD(S) (lectures – labs – practice etc.):

- 1. Lectures.
- 2. Workshops.
- 3. Laboratory activities.
- 4. Field work.

ASSESSMENT METHOD(S):

1.	Mid-term exams	(40%)
2.	Final exams	(60%)

LEARNING OUTCOMES:

Upon the completion of this course the student will be able to:

- 1. Identify and describe (according to international terminology) all the movements of the human body.
- 2. Recognize the different types of muscle functions during various exercises of the human body.
- 3. Know the mechanisms of movement production and adjustment.
- 4. Propose solutions to overcome mechanical problems in the various movements.
- 5. Design and implement exercise programs using different modes of muscle activation.

Learning Outcomes	Educational Activities	Assessment	Students Work Load (hours)
Ability to identify and describe	Lectures, comprehension	Mid-term /	40
(according to international	exercises, home study.	final exams.	
terminology) all the			

LEARNING OUTCOMES – CONTINUED:

movements of the human			
body.			
Recognition of the different	Lectures, comprehension	Mid-term /	40
types of muscle functions	exercises, home study.	final exams.	
during various exercises of the			
human body.			
Knowledge of the mechanisms	Lectures, problem	Mid-term /	40
of movement production and	solving, home study.	final exams.	
adjustment.			
Ability to propose solutions to	Lectures, problem	Mid-term /	40
overcome mechanical	solving, home study.	final exams.	
problems in the various			
movements.			
Ability to design and	Lectures, workshop,	Mid-term /	50
implement exercise programs	problem solving and	final exams.	
using different modes of	home study.		
muscle activation.			
		TOTAL	210

OBLIGATORY & SUGGESTED BIBLIOGRAPHY:

- Leger, D., Ozkaya, N. & Nordin, M. (2004). Fundamental principles of biomechanics: equilibrium, motion and deformation. Translation in Greek: K. Boudolos, Athens: Paschalidis.
- 2. Class notes posted on the e-class.