

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 – CONTINUED:

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

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

OBLIGATORY & SUGGESTED BIBLIOGRAPHY:

1. 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.