

Course Title	Clinical Exercise Physiology		
Course Code	PHYS307		
Course Type	Compulsory		
Level	Bachelor (Level 1)		
Year / Semester	3 ^d / Fall		
Instructor's Name	Dr Julia Moissoglou Missitzi, Dr Elena Papacosta		
ECTS	6	Lectures / week	2
		Laboratories/week	2
Course Purpose	The aim of the course is to introduce students to the concept of Clinical Exercise Physiology. It is the science which covers the development and analysis of the relationship between theory and practice of the field of exercise Physiology. Particularly, studies the body's responses in people suffering from chronic diseases both during movement and during systematic exercise. In particular, how exercise can improve many health parameters of patients with chronic diseases, such as cardiovascular diseases, type I & II diabetes, chronic renal failure, various forms of cancer, obstructive or restrictive lung diseases, neurological diseases, etc., and bring about an improvement in the quality of life of patients. At the end of the course, students will be familiar with systematic exercise and exercise programs which be mentioned of recruitment and rehabilitation of chronic diseases.		
	Course Learning Outcomes		Aligned PLOs
Learning Outcomes	Upon completion of the theoretical part of the course, students are expected to be able to:		
	1. Define the basic principles of Ergophysiology/clinical Ergophysiology and its applications in special populations		K1 & K2
	2. Interpret and understand physiological, metabolic, biochemical and neuromuscular parameters in various patient groups		AP1 – AP4
	3. Understand the role of exercise for the acute and chronic adaptations it performs in the functional systems of the human body.		C1 & C2
	4. Describe the individual components of the exercise stimulus that aim to maintain and promote the health of		K1 & K2, C1 & C2

	an individual, a group, a community, in different environments	
	5. Understand what is functional ability and how it changes through different forms of exercise.	K1 & K2
	6. Analyze techniques for assessing patients' health status	AN1 – AN3
	7. Describe the role of advanced technology in the dynamic evaluation and conditioning of the cardiopulmonary and cardiovascular system of a wide range of cardiac, pulmonary and sports injuries conditions	C1, AP3, E3
	8. Underline the basic principles of exercise and will be able to implement exercise protocols to promote health.	K1&K2
	Upon completion of the laboratory part of the course, the learner is expected to be able to:	
	9. Practice a detailed assessment of the patient in need of cardiopulmonary or sports rehabilitation	AP1, AP3 & AP4
	10. Evaluate the functional capacity of people with lung diseases (6MWT) the maximum stress test to check the aerobic capacity of patients, the submaximal tests to check the functional capacity, the muscular function of the upper and lower limbs in patients with chronic diseases, the cardiorespiratory indicators from the application of ergospirometry (comparison of normal values and pathological conditions)	E1-E3
	11. Apply advanced technology in the dynamic evaluation and conditioning of the cardiopulmonary and cardiovascular system of a wide range of cardiac, pulmonary and sports injuries conditions	AP3, E3
	12. Collect, interpret and synthesize the results of the evaluation in relation to exercise and different population groups	S1, E1 & AP1
	13. Select and apply assessment methods in the context of functionality, prevention and promotion of physical and mental health.	E1 & AP1
	14. Understand, select and apply the clinical and planned exercise in relation to the specialized physical condition, health problems and performance of the patient in need of cardiopulmonary or sports rehabilitation	K1 & C1

	15. Recognize and identify the short- and long-term results brought about by the clinical application of the planned exercise.			C1, AN1 &S1
	16. Implement competently special clinical ergophysiological interventions in relation to the exercise of a patient in need of cardiopulmonary or sports rehabilitation.			K1, AP1 & AP4
Prerequisites	None	Co-requisites	None	
Course Content	<p>The course will include the following:</p> <ul style="list-style-type: none"> • Patient detailed assessment and clinical reasoning techniques in cardiovascular, pulmonary diseases, musculoskeletal disorders and sports injuries according to the ICF classification system • Aerobic capacity – Aerobic endurance • Maximum oxygen uptake • Basic applications of exercise-spirometry in patients with chronic diseases. Exercise-spirometry examines in detail the functioning of the 3 main systems of the human body that are involved in exercise: the respiratory, cardiovascular and muscular systems. • Measurement and assessment of somatometric indices and body composition • Advanced technology equipment (spirometers, ergospirometry, gas exchange monitors, vital signs monitoring during exercise etc) • Restrictive/Obstructive factors of respiratory function • Resting spirometry – Lung volumes and capacities • Muscle function and exercise-induced adaptation • Cardiorespiratory adaptations to exercise • Diet issues combined with exercise • Setting up the training process • Assessment and control of exercise in patients • Control and understanding of exercise in children and the elderly <p>Laboratory:</p> <p>Interventions and procedures in accordance to the theoretical content of the course such as:</p> <ul style="list-style-type: none"> • Physical examination, evaluation, exercise goal setting, Exercise program design, exercise program implementation, Evaluation, according to the ICF model • Assessment of the physical fitness of people of developmental age, gender differences and elderly people • Control and maintenance of body weight • Practical application to assess the functional capacity of people with lung diseases (6MWT) • Maximal exercise test to check the aerobic capacity of the patients • Sub maximal functional capacity control and assessment tests 			

	<ul style="list-style-type: none"> • Measurement and evaluation of upper and lower limb muscle function in patients with chronic diseases • Recording and evaluation of Cardiorespiratory indicators from the application of exercise ergometer (comparison of normal values and pathological conditions)
Teaching Methodology	<p>Theory</p> <p>The course is delivered to the students through lectures, using computer-based presentations programmes. Case Studies, Discussion, Questions / Answers are also used depending on the content of the lecture. Lecture notes and presentations are available online for use by students in combination with textbooks. Relevant material published in international scientific journals is also used to follow the latest developments related to the subject of the course.</p> <p>Laboratory</p> <p>During the laboratory courses, students develop their clinical skills in skill trainers and patient simulators so that they can successfully and safely apply them in a real clinical environment.</p>
Bibliography	<p><u>Textbooks:</u></p> <p>Ehrman J. Clinical Exercise Physiology 4th Edition with Web Resource, (2018) Human Kinetics Publishers</p> <p>McArdle, W.D., Katch, F.I. and Katch, V.L., (2001). Φυσιολογία της Άσκησης, Τόμοι I & II. Ιατρικές Εκδόσεις Π.Χ. Πασχαλίδης</p> <p>McArdle, W.D., Katch, F.I. and Katch, V.L. (2009), Exercise physiology: energy, nutrition, and human performance_ 7th Edition. Lippincott Williams &Wilkins.</p> <p>Brown, S.P., Miller, W.C., and Eason, J.M., 2006. Exercise Physiology. Lippincott Williams & Wilkins American College of Sports Medicine, (2002). ACSM's Resources for Clinical Exercise Conditions. Εκδόσεις Lippincott Williams & Wilkins</p> <p>American College of Sports Medicine, (2005). Advance Exercise Physiology_ Εκδόσεις Wiliams & Wilkins</p> <p>American College of Sports Medicine, (2009). ACSM'S guidelines for exercise testing and prescription_ Εκδόσεις Wiliams & Wilkins</p> <p><u>References:</u></p> <p>Keteyian, Steven J., and Alexander Michaels. (2022) "Heart failure in cardiac rehabilitation: a review and practical considerations." Journal of Cardiopulmonary Rehabilitation and Prevention 42.5: 296-303.</p> <p>Sabbahi, Ahmad, et al. (2022). "Exercise training in cardiac rehabilitation: Setting the right intensity for optimal benefit." Progress in Cardiovascular Diseases.</p>

	<p>Yingtong, Meng, et al. (2022) "The effects of early exercise on cardiac rehabilitation-related outcome in acute heart failure patients: a systematic review and meta-analysis." International Journal of Nursing Studies: 104237.</p> <p>Souto-Miranda, Sara, et al. (2022) "Pulmonary rehabilitation outcomes in individuals with chronic obstructive pulmonary disease: a systematic review" Annals of Physical and Rehabilitation Medicine 65.3: 101564.</p> <p>Soril, Lesley JJ, et al. (2022) "The effectiveness of pulmonary rehabilitation for post-COVID symptoms: A rapid review of the literature." Respiratory medicine: 106782.</p> <p>Uzzaman, Md Nazim, et al. (2022) "Effectiveness of home-based pulmonary rehabilitation: systematic review and meta-analysis." European Respiratory Review 31.165.</p>		
	Assessment Method and Description	Weight	Aligned CLOs
Assessment	<p>Group Solving problem to assess how students can apply theoretical knowledge to real-life situations. Students are presented with scenarios that require analysis, critical thinking, and the application of theoretical concepts and they are assessed based on their ability to perform verbal presentations, viva voce examinations, identify and evaluate relevant information, propose solutions, and provide justifications for their choices.</p>	15%	1-8
	<p>Classroom discussions and debates: Students engage in classroom discussions and debates to assess their theoretical knowledge. Active participation is encouraged to hone their critical thinking skills by posing open-ended questions and facilitating dialogue.</p>	15%	1-16
	<p>Laboratory evaluation consists of assessment of the expected skills and competences, critical thinking, problem-solving and teamwork skills. During the laboratory sessions, students are closely observed as they engage in the assigned tasks and note is taken regarding the actions, approach and any relevant observations that demonstrate their understanding of the subject matter and application of skills. After assessing the laboratory work, constructive feedback is provided to students. Their strengths and areas for improvement are highlighted, linking them back to the learning outcomes to help students understand their progress and guide them towards further</p>	20%	9-16

	development. Depending on the nature of the laboratory work, peer assessment can be incorporated, where students evaluate each other's work based on the established criteria to promote self-reflection, collaboration, and a deeper understanding of the subject matter.		
	Final Exam: comprehensive final exam, to assess students' overall theoretical knowledge. These assessment covers a broader range of topics and learning outcomes from the entire program of study, to gauge the students' understanding and integration of knowledge across different areas.	50%	1-16
Language	Greek / English		