Course Title	**Cardiopulmonary physiotherapy I**				
Course Code	PHYS205				
Course Type	Compulsory				
Level	Bachelor (Level 1)				
Year / Semester	2^{d}/ Fall				
Instructor's Name	Dr. Emmanuel Papadopoulos, Dr. Julia Moissoglou Missitzi				
ECTS	6	**Lectures / week**	2	**Laboratories/week**	2
Course Purpose	The purpose of this course is to introduce students to the basic knowledge and skills required to provide safe and effective patient-centered care to the cardiopulmonary patient. The course aims at the students' understanding of the structure and function of the respiratory system as well as the evaluation process so that they can take into account the subjective and objective findings and design the appropriate treatment plan.				
Learning Outcomes	Upon completion of the theoretical part of the course the learner is expected to be able to: • recall the physiology of the respiratory system, the physiology of exercise and its effect on the improvement of clinical symptoms, • recognize and describe the pathophysiology of respiratory, cardiology and cardio-vascular diseases • describe the evaluation process of the cardio-respiratory patient • sets therapeutic goals to improve the clinical picture of the patient who treats impairment of cardio-respiratory function, • takes into account the findings of the evaluation and organizes an appropriate Physiotherapy program based on the specific needs of the individual, • evaluates and interprets the impact mechanisms of different therapeutic means, methods and techniques on the basis of evidence-based physiotherapy. Upon completion of the laboratory part of the course, the student is expected to be able to: • perform clinical evaluation of the cardio-respiratory patient, • interpret the findings (blood gases, auscultation with a stethoscope, functional tests, etc.) of the evaluation,				

	• design and implement a cardio-respiratory physiotherapy program to strengthen respiratory muscles, increase respiratory volumes, reduce breathing work, remove secretions, Improving physical condition • safely applies special cardio-respiratory physiotherapy techniques • propose methods for the prevention and treatment of cardio-respiratory diseases • plan and organize a comprehensive fitness improvement program in patients with acute and chronic cardiorespiratory problems		
Prerequisites	None	Co-requisites	None
Course Content	• Respiratory physiology. • Pathophysiological mechanisms of respiratory and cardiovascular diseases and factors that limit the ability of daily physical activity in patients with chronic respiratory and / or cardiac morbidity. • Evaluation of a respiratory patient (History, observation, general condition, dyspnoea, respiratory pattern, auscultation, cough and secretions, functional tests of the lungs: evaluation and interpretation, muscle strength of peripheral muscles: evaluation and interpretation, blood gases: interpretation, basic chest X-ray evaluation, physical activity, functional capacity/daily activities). • Respiratory diseases (obstructive type, restrictive type, muscular pump, operated patient) - Problems - Physiotherapeutic rehabilitation goals. • Techniques for removing secretions in the adult respiratory patient (Cough, positional drainage, pressures-boredoms-vibrations, autogenous drainage, positive expiratory pressure (PEP), active breathing cycle, special devices, humidification, suction. • Physiotherapeutic techniques for increasing respiratory volumes (controlled mobilization, placement, breathing exercises, neurophysiological facilitation of breathing, mechanical aids - feedback spirometers, CPAP, IPPB). • Physiotherapy techniques for decrease in the work of breathing (relaxation, placement, retraining / breathing control). • Evaluation of respiratory muscles and their training, respiratory techniques and chest expansion techniques. • Pharmacotherapy related to respiratory physiotherapy (oxygen therapy in different pathologies, nebulization therapy, effect of cardio-respiratory drugs on respiratory physiotherapy and rehabilitation). • Preoperative and postoperative physiotherapy in belly, chest and heart surgeries • Exercise and physical activity (exercise physiology, fitness assessment, exercise principles and exercise prescription) • Design and implementation of a cardiopulmonary rehabilitation program • Non-Invasive Mechanical Ventilation (indications/contraindications, ways to assist breathing, selection of equipment and mask, initiation of MEMA and adaptation to the patient)		

	• Intensive Care Unit - increased care unit: physiotherapeutic evaluation, practical knowledge of Mechanical Ventilation concerning the Physiotherapist, early mobilization, weaning, physiotherapy in the ICU and MAF, physiotherapy in patients with COVID-19 infection. • Evaluation and treatment of the premature and newborn infant-differences with the adult respiratory patient • Respiratory patient education (treatment options and prognosis, self-care, communication techniques with respiratory patients and their families).
Teaching Methodology	**Theory** 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. **Laboratory** 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.
Bibliography	**Textbooks:** West JB. Respiratory Physiology: The Essentials. 8th ed. Philadelphia: Lippincott Williams & Wilkins, 2008. West JB. Respiratory Physiology: The Essentials. 9th ed. Philadelphia: Lippincott Williams & Wilkins, 2012. Weinberg SE, Cockrill BA, Mandel A. Principles of Pulmonary Medicine. 5th ed. Elsevier Health Sciences, 2008. McArdle W, Katch F, Katch W. Essentials of physiology. New York: Lippincott, Williams & Wilkins, 2001. Prenderga.st TJ, Russo SJ. Pulmonary disease. In SJ. McPhee & WF. Ganong (Eds.), Pathophysiology of disease: An introduction to clinical medicine. New York: McGraw-Hill. (2006) **References:** Morice AH, Fontana GA, Belvisi MG, Birring SS, Chung KF, Dicpinigaitis DV, et al. (2007) ERS guidelines on the assessment of cough. Eur Respir J; 29: 1256–1276. American Thoracic Society (1999). Dyspnoea. Mechanisms, assessment and management: A consensus statement. Am J Res Crit Care Med 1999; 159: 321-340.

	Grammatopoulou E, Haniotou A, Douka G, Koutsouki D. (2010) Factors associated with BMI in Greek adults with asthma. Journal of Asthma; 47: 276-280. Grammatopoulou E, Skordilis E, Stavrou N, Myrianthefs P, Karteroliotis K, Baltopoulos G, Koutsouki D. The effect of physiotherapy-based breathing retraining on asthma control. Journal of Asthma Journal of Asthma, 2011; 48:593-601. Denehy L, Granger CL, El-Ansary D, Parry SM. (2018) Advances in cardiorespiratory physiotherapy and their clinical impact. Expert Rev Respir Med Mar;12(3):203-215. Marques A, Pinho C, De Francesco S, et al. (2020) A randomized controlled trial of respiratory physiotherapy in lower respiratory tract infections. Respir Med Feb; 162:105861.
Assessment	**Continuous Assessment (50%):** The assessment may include any combination of the following: • **Written and/or oral**, and it consists of multiple – choice, short answer, open ended questions and/or essay questions, that align with the learning outcomes, in order to assess the theoretical knowledge gained. The questions ensure that students will demonstrate a deep understanding of the subject matter and apply their knowledge to solve problems or analyse scenarios. • **Assignments and projects** provide opportunities for students to apply their theoretical knowledge in practical ways. The assignments are designed in a way that require critical thinking, research, analysis, and synthesis of information. Projects can be individual, self directed learning or group-based and should align with the learning outcomes. Students are evaluated on the quality of their work, the depth of understanding displayed, and their ability to effectively communicate their ideas. Assignments and projects may be individual or group work. • Use of **case studies or problem-solving exercises** 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. • **Online quizzes or interactive assessments**: Online quizzes or interactive assessments, reflective writing can be used through the Moodle platform, to create quizzes with various question formats. These assessments can be self-paced or timed, and immediate feedback can be provided to students. • **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. • **Peer and self-assessment**: Students are assigned to review and provide feedback on each other's work, encouraging them to critically evaluate their peers' understanding and provide constructive suggestions. **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 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 (50%):** comprehensive final exam, to assess students' overall theoretical knowledge. These assessments cover 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.
Language	Greek / English