COURSE OUTLINE: CLINICAL PHYSIOTHERAPY IN THE CARDIOVASCULAR & RESPIRATORY SYSTEM I

1. GENERAL

SCHOOL	SCHOOL OF HEALTH SCIENSES		
ACADEMIC INIT	PHYSIOTHERAPY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**PHD1**	**SEMESTER**	**4th**
COURSE TITLE	**CLINICAL PHYSIOTHERAPY IN THE CARDIOVASCULAR & RESPIRATORY SYSTEM I**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
LECTURES	2	3
CLINICAL PRACTICE	6	4
		7

COURSE TYPE	CSM *Compulsory Modules of General Knowledge Background (CMGKB), Compulsory Modules of Specific Knowledge Background (CMSKB), Compulsory Specialisation Modules (CSM), Optional Modules (OM)*
PREREQUISITE COURSES:	RESPIRATORY PHYSIOTHERAPY
LANGUAGE OF INSTRUCTION & EXAMINATIONS:	GREEK (theoretical part) GREEK or ENGLISH (clinical practice)
IS THE COURSE OFFED TO ERASMUS STUDENTS?	YES (clinical practice)
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/PHYSIO_U_144/ https://eclass.uth.gr/courses/PHYSIO_U_191/

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Learning Outcomes of the Theoretical Part:

The student, upon completion of the course, will be able to:

1. Understands, documents, and manages findings from subjective, objective, and laboratory assessments of respiratory, cardiological, and post-surgical patients in the clinical setting, demonstrating comprehensive clinical reasoning.
2. Identifies the primary pathological issues and the clinical presentation of the patient to make well-informed therapeutic decisions.
3. Appreciates the diversity of options and the depth of clinical practice from multiple perspectives, integrating scientific evidence with both the physiotherapist's and the patient's preferences.
4. Successfully combines clinical experience with existing evidence-based knowledge.

5. Sets realistic short-term and long-term intervention goals.
6. Selects appropriate therapeutic modalities for each goal and applies them effectively, understanding their indications and contraindications to ensure the safe implementation of physiotherapeutic techniques.
7. Reassesses the therapeutic intervention by recognizing signs of improvement or deterioration in the clinical condition of respiratory, cardiological, and post-surgical patients.

Learning Outcomes of the Clinical Part:

The student, upon completion of the course, will be able to:

1. Can take a patient's medical history and document all disorders of any etiology that arise from it.
2. Fully understands clinical findings and applies acquired knowledge in practice, correctly interpreting the results of clinical assessment.
3. Organizes a therapeutic intervention plan for both the acute and chronic stages of respiratory or cardiovascular rehabilitation.
4. Evaluates the effectiveness of a physiotherapy session and adjusts treatment accordingly, responding to daily clinical realities.
5. Implements specific therapeutic techniques and modalities in the hospital setting (as detailed in the respective sections).
6. Understands the importance of collaboration with patients, other healthcare professionals, and fellow physiotherapists and can effectively work as part of a team.
7. Demonstrates awareness of ethical issues in clinical practice.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology
Adapting to new situations
Decision-making
Working independently
Teamwork
Working in an international environment
Working in an interdisciplinary environment
Production of new research ideas
Project planning and management
Respect for difference and multiculturalism
Respect for the natural environment
Showing social, professional and ethical responsibility and sensitivity to gender issues
Criticism and self-criticism
Production of free, creative and inductive thinking
Others …

- Research, analysis, and synthesis of data and information, utilizing the necessary technologies.
- Adaptation to new situations.
- Decision-making.
- Critical thinking and self-assessment.
- Independent work.
- Teamwork.
- Work in an interdisciplinary environment.
- Clinical case planning and management.
- Demonstration of social, professional, and ethical responsibility, with sensitivity to gender-related issues.
- Respect for diversity and multiculturalism.
- Promotion of free and inductive thinking.

3. SYLLABUS

A. THEORETICAL PART

Unit 1: Clinical Cardiovascular and Respiratory Physiotherapy – Evidence-Based Physiotherapy Practice

- The role of the physiotherapist in the multidisciplinary medical-nursing therapeutic team.
- Management of interprofessional relationships and scientific knowledge.
- Clinical cardiovascular and respiratory physiotherapy in healthcare institutions in Europe, Australia, and the USA.
- Evidence-based physiotherapy practice in ICU, post-surgical rehabilitation, and respiratory and cardiovascular diseases.

Unit 2: Assessment of Respiratory and Cardiac Patients in the Hospital (Clinical Reasoning, Part A)

- Understanding the process of assessing respiratory and cardiac patients.
- Documentation and management of subjective, objective, and laboratory findings.
- Establishing therapeutic intervention goals and managing intervention techniques.

Unit 3: Assessment of Respiratory and Cardiac Patients in the Hospital (Clinical Reasoning, Part B)

- Understanding and managing findings from observation, palpation, auscultation, vital signs, radiographic imaging, blood gas analysis, ECG, spirometric, and functional patient assessment.

Unit 4: Improvement of Pulmonary Ventilation – Bronchial Clearance (Clinical Presentation)

- Understanding techniques to improve pulmonary ventilation in hospitalized patients.
- Appropriate positioning, mobilization, equipment, and devices in clinical and ICU settings.
- Clinical justification for selecting appropriate bronchial clearance techniques in clinical and ICU settings.
- Presentation of research evidence supporting intervention techniques and justification of selection.

Unit 5: Respiratory Diseases (Clinical Case – Acute Condition)

- Analysis of a clinical case of an acute respiratory patient.
- Collection of subjective and objective evaluation data and consideration of findings for decision-making.
- Presentation of research evidence supporting intervention techniques and their clinical justification.

Unit 6: Respiratory Diseases (Clinical Case – Chronic Stage)

- Analysis of a clinical case of a chronic respiratory patient.
- Collection of subjective and objective evaluation data and consideration of findings for long-term respiratory intervention and functional rehabilitation decision-making.

Unit 7: Heart Failure and Cardiac Surgeries (Clinical Cases)

- Analysis of a clinical case of a patient with heart failure: inpatient and outpatient intervention.
- Analysis of a clinical case of cardiac surgery.
- Evaluation and consideration of data for decision-making and rehabilitation goal setting.

Unit 8: Myocardial Infarction in the Infarction Unit (Clinical Case)

- Clinical case assessment elements.
- Progressive physiotherapy intervention for post-myocardial infarction patients.

Unit 9: Preoperative and Postoperative Respiratory Physiotherapy (Clinical Case)

- Analysis of a clinical case from the preoperative to the postoperative stage.
- Therapeutic goals and intervention techniques.
- Selection and discontinuation of oxygen therapy.
- Selection of therapeutic means to prevent postoperative pulmonary and cardiovascular complications.
- Criteria for initiating and discontinuing physiotherapeutic intervention.

Unit 10: Physiotherapy in the Intensive Care Unit (ICU)

- Essentials of mechanical ventilation (invasive and non-invasive).
- Monitoring changes in cardiopulmonary parameters in ICU patients.
- The importance of proper positioning and mobilization in improving respiratory function in

critically ill patients, preventing pressure ulcers, thrombosis, and musculoskeletal deformities.

- Ventilator features for mechanically supported patients.
- Changes in ventilation parameters and key aspects of weaning.
- Recognition of indications and contraindications of physiotherapeutic intervention.

Unit 11: Peripheral Vascular Diseases (Clinical Case)

- Analysis of clinical cases with peripheral arterial disease and thrombophlebitis.
- Indications and contraindications for physiotherapeutic intervention.

Unit 12: Physiotherapeutic Intervention in Neurological Patients with Respiratory Failure

- Analysis of a chronic neurological case with associated respiratory failure.
- Collection of subjective and objective evaluation data and consideration of findings for long-term respiratory intervention decision-making.
- Criteria for selecting physiotherapy techniques to improve pulmonary ventilation and/or bronchial clearance.

Unit 13: Physiotherapeutic Intervention in Pediatric and Gynecological Clinics

- Analysis of a respiratory case in a hospitalized child.
- Criteria for initiating physiotherapy, selection of appropriate bronchial clearance techniques.
- Designing parent education interventions.
- Analysis of a case involving lower abdominal gynecological surgeries.
- Criteria for mobilization and analysis of postoperative complications.

Unit 14: Final Student Assessment - Examination

- The overall performance of students is evaluated according to the course assessment methods outlined below.

B. CLINICAL PART

Unit 1: Introduction to Clinical Practice

- Communication with the healthcare team, guidelines for adapting to the clinical environment, elements of professional behavior, and patient communication.
- Clinical visits to various hospital departments, the Intensive Care Unit (ICU), High Dependency Unit (HDU), and the Coronary Care Unit (CCU). Participation and observation of medical rounds in each department and specialized units.
- Initial exposure to medical history-taking and reviewing patient medical records.
- Clinical assessment of respiratory, post-surgical, cardiology patients, and hospitalized children.

Unit 2: Clinical Practice in the Pulmonology Clinic - Acute Respiratory Disease

- Comprehensive assessment of clinical presentation and laboratory findings of hospitalized patients with acute respiratory disease or exacerbation of chronic respiratory disease: case evaluation, clinical reasoning, therapeutic intervention.
- Evaluation of respiratory failure through blood gas analysis and oximetry. Selection of appropriate oxygen therapy (mask, nasal cannula).
- Assessment of atelectasis considering chest X-ray, auscultation, and thoracic cage inspection. Selection of appropriate techniques for improving pulmonary ventilation.
- Assessment of bronchial secretions through auscultation and chest X-ray findings. Bronchial clearance: selection of appropriate technique based on evaluation findings and patient cooperation ability. Use of bronchial clearance devices, humidification, and nebulization equipment.
- Criteria for patient mobilization or discontinuation of physiotherapeutic intervention.
- Application of selected therapeutic techniques.
- Student evaluation.

Unit 3: Clinical Practice in the Pulmonology Clinic - Chronic Respiratory Disease

- Assessment and physiotherapeutic intervention for patients with chronic obstructive pulmonary disease (COPD). Selection of techniques to improve thoracic dynamic hyperinflation and pulmonary hypoventilation. Selection of bronchial clearance devices during exacerbations if long-term use is necessary. Teaching exacerbation monitoring using a peak flow meter. Patient education on diaphragmatic breathing and dyspnea management techniques.
- Assessment and physiotherapeutic intervention for patients with cystic fibrosis. Selection of appropriate bronchial clearance techniques and devices for chronic use. Respiratory muscle strengthening exercises.
- Assessment of respiratory failure severity and physiotherapy intervention in patients with diffuse lung diseases.
- Assessment and physiotherapeutic intervention in cases of severe spinal deformities (kyphosis, scoliosis) or neurological conditions causing restrictive lung dysfunction and respiratory failure.
- Assessment and physiotherapeutic intervention in adult asthmatic patients.
- Application of selected therapeutic techniques per clinical case.
- Student evaluation.

Unit 4: Clinical Practice in the Pulmonology Outpatient Clinic

- Observation of cases in regular outpatient pulmonology clinics. Physiotherapist involvement in multidisciplinary asthma, COPD, sleep, smoking cessation, and cystic fibrosis clinics.
- Physiotherapeutic assessment of cases attending regular follow-ups. Participation in patient education, symptom management, and counseling.
- Prescription of appropriate exercises to improve skeletal and respiratory muscle strength and patient functionality.
- Training in dyspnea management techniques and relaxation postures.
- Providing written instructions, monitoring, and reassessment.
- Participation in spirometry, diffusion testing, and respiratory muscle strength measurement procedures.
- Application of selected interventions.
- Student evaluation.

Unit 5: Clinical Practice in the Intensive Cardiology Unit

- Comprehensive assessment of clinical presentation and laboratory findings in hospitalized patients with acute coronary syndrome: case evaluation and clinical reasoning.
- Criteria for initiating physiotherapy based on hemodynamic stabilization indicators in coronary disease patients. Monitor tracking.
- Personalized prescription of in-hospital exercise programs, Phase I of cardiovascular rehabilitation, and implementation.
- Implementation of breathing exercises, training in the use of inspiratory muscle trainers.
- Bedside mobilization following progressive loading criteria (passive, assisted, active movement of body segments).
- Progressive sitting and walking initiation.
- Application of selected therapeutic techniques.
- Student evaluation.

Unit 6: Clinical Practice in the Cardiology Clinic - Chronic Heart Failure

- Physiotherapy for hospitalized patients with chronic heart failure: case assessment, clinical reasoning, therapeutic intervention.
- Implementation of in-hospital exercise programs, Phase I of cardiovascular rehabilitation, following subjective and objective assessment findings and patient cooperation.
- Assessment of mobilization indications and contraindications.

- Outpatient Cardiology Clinic: observation of outpatient cases, participation in electrocardiography (ECG) and stress testing. Observation of echocardiography.
- Application of selected therapeutic techniques.
- Student evaluation.

Unit 7: Clinical Practice in Cardiac Surgery

- Preoperative assessment and patient education for upcoming cardiac surgery.
- Teaching breathing exercises, inspiratory muscle training, postoperative positioning techniques, bed-to-sitting transitions.
- Mobilization therapy for preventing postoperative complications.
- Postoperative assessment of clinical condition and laboratory findings. Continuous monitoring.
- Personalized in-hospital exercise program prescription, Phase I of cardiovascular rehabilitation, and implementation.
- Techniques to improve pulmonary ventilation and bronchial clearance. Participation in the process of mechanical ventilation support and weaning based on established criteria. Bronchial suctioning, humidification, and nebulization. Application of the active breathing cycle technique for bronchial clearance.
- Bedside mobilization with continuous monitoring.
- Progressive sitting, standing, and walking as appropriate.
- Application of selected therapeutic techniques.
- Student evaluation.

Unit 8: Presentation of Complex Cases

- Students present and analyze clinical cases incorporating knowledge and skills applied in previous sections.

Unit 9: Clinical Practice in the Intensive Care Unit (ICU)

- Physiotherapy for critically ill ICU patients: case evaluation, clinical reasoning, therapeutic intervention.
- Comprehensive assessment of clinical presentation and laboratory findings. Evaluation of respiratory failure severity.
- Application of techniques for improving pulmonary ventilation. Participation in mechanical ventilation support and weaning processes.
- Respiratory muscle training for mechanical ventilation weaning support.
- Continuous monitoring of cardiopulmonary parameters.
- Oxygen therapy device application and regulation: t-piece, Venturi mask, nasal cannula.
- Bronchial secretion drainage techniques based on auscultation and radiological findings. Bronchial suctioning. Use of humidification and nebulization devices.
- Application of diaphragmatic breathing, breathing coordination, and thoracic expansion techniques for atelectasis resolution.
- Correct patient positioning for optimal pulmonary ventilation and secretion drainage.
- Bedside mobilization following progressive loading criteria (passive, assisted, segmental movement).
- Neuromuscular electrical stimulation for prolonged ICU stay patients with muscle atrophy.
- Progressive bed sitting.
- Application of selected therapeutic techniques.
- Student evaluation.

Unit 10: Clinical Practice in the High Dependency Unit (HDU)

- Physiotherapy for HDU patients: case assessment, clinical reasoning, therapeutic intervention.
- Continuous monitoring of cardiopulmonary parameters.

- Oxygen therapy device application and regulation: t-piece, Venturi mask, nasal cannula.
- Bronchial secretion drainage techniques based on auscultation and radiological findings. Bronchial suctioning. Use of humidification and nebulization devices.
- Application of diaphragmatic breathing, breathing coordination, and thoracic expansion techniques for atelectasis resolution.
- Bedside mobilization following progressive loading criteria (assisted, active, resistance exercises for all muscle groups).
- Neuromuscular electrical stimulation for prolonged HDU patients with muscle atrophy.
- Progressive bed sitting, standing, balance retraining, and assisted walking.
- Application of selected therapeutic techniques.
- Student evaluation.

Unit 11: Clinical Practice in the Surgical Clinic - Upper and Lower Abdominal Surgery

- Preoperative intervention and postoperative physiotherapy in surgical patients: case assessment, clinical reasoning, therapeutic intervention.
- Teaching breathing exercises, inspiratory muscle training, postoperative positioning, and sitting and standing transitions.
- Mobilization therapy for preventing postoperative complications.
- Postoperative assessment of clinical condition and laboratory findings. Evaluation of respiratory failure severity based on blood gases, oximetry, auscultation, and radiology.
- Application of pulmonary ventilation techniques.

Unit 12: Clinical Practice in the Pediatric Clinic

- Physiotherapy for children with acute respiratory disease or respiratory distress of any etiology who are hospitalized in the clinic: case assessment, clinical reasoning, therapeutic intervention.
- Application of specialized techniques for bronchial clearance. Parent education and training in bronchial clearance techniques.
- Proper positioning to improve pulmonary ventilation and facilitate bronchial clearance.
- Implementation of techniques related to the selected therapeutic intervention.
- Student evaluation.

Unit 13: Clinical Practice in the Internal Medicine Clinic

- Assessment and physiotherapeutic intervention for medical cases requiring respiratory physiotherapy and mobilization.

Unit 14: Final Student Assessment - Examination

- The overall performance of students is evaluated according to the course assessment criteria.

4. TEACHING and LEARNING METHODS – EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	**Face-to-Face Instruction** The teaching methods for the **theoretical part** of the course include a variety of instructional approaches and tools, such as: • Lectures and presentations using a whiteboard, overhead projector, fixed projection system, video, and television. • Classroom discussions and feedback. • Work in small groups or individual assignments. • Student presentations. • Guest Lecturers The **clinical part** of the course is taught using the following methods and tools: • Demonstration and application of methods and

techniques used in the rehabilitation of patients with respiratory conditions within the hospital.
- Demonstration and application of the laboratory equipment in the hospital's physiotherapy department.
- Clinical training of students in small groups.
- Presentation of clinical cases by students.
- Analysis and presentation of clinical cases.
- Clinical application.

USE OF INFORMATION & COMMUNICATIONS TECHNOLOGY

Use of ICT in teaching, laboratory education, communication with students

Use of ICT in Teaching, Laboratory Training, and Student Communication

Theoretical Part:

- Utilization of Information and Communication Technologies (ICT), including the Internet, multimedia, electronic discussions via an asynchronous learning platform, and email.

Clinical Part:

- Utilization of Information and Communication Technologies (ICT), including the Internet, multimedia, electronic discussions via an asynchronous learning platform, and email.

TEACHING METHODS

The manner and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.

The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS.

Activity	Semester workload
Lectures	30
Clinical Practice	90
Independent Study	45
project	10
Couse Total	**175**

STUDENT PERFORMANCE EVALUATION

Description of the evaluation procedure

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other

Specifically defined evaluation criteria are given, and if and where they are accessible to students.

Student Performance Assessment

The assessment criteria for student performance are available on the course website and are specified as follows:

Theoretical Part:
A final written assessment (or an oral examination in the presence of two instructors) is conducted in combination with a mid-term evaluation (progress test). The final course evaluation takes place after the end of the academic semester and covers the entire taught material. The student is required to answer questions (essay or multiple choice) that evenly cover the course's teaching units, as well as questions that require critical thinking. The final theory grade ranges from 0 to 10 and is determined by the final exam (60%) and the mid-term evaluation (40%), with a predetermined weighting factor set at the beginning of the semester.

Clinical Part:
Oral examinations are conducted by the instructors regarding the assignment, presentation, and implementation of

	physiotherapeutic interventions. There is also a daily assessment in the clinical setting through laboratory exercises and the recording of patient evaluation sheets by students. In each session, instructors assess the student's participation and ability to effectively manage the assigned clinical case. The success or failure of the applied intervention is evaluated under the instructor's supervision. Specifically, the examination focuses on the student's ability to approach the patient, take a medical history, conduct a structured assessment, set short-term and long-term therapeutic goals, and apply appropriate physiotherapy techniques. The student must successfully complete a set of physiotherapeutic interventions covering all cardiovascular and respiratory physiotherapy techniques in each clinical setting where they are placed. The final examinations are oral, requiring students to solve practical problems and perform necessary procedures (e.g., apply bronchial clearance techniques to a patient with a respiratory condition and improve pulmonary ventilation). The final clinical grade is 0-10, determined by the student's daily clinical performance, with equal weighting given to the grades obtained in each individual clinical placement. The overall student performance is evaluated by combining theoretical and clinical components of the course, using weighted coefficients that sum to 1, based on the credit units of each section. Successful completion of both theoretical and clinical components is mandatory for passing the course. The final grade is recorded on a 10-point scale (0-10), with a minimum passing grade of 5.

5. ATTACHED BIBLIOGRAPHY

1. Γραμματοπούλου Ε. Φυσικοθεραπευτικές Τεχνικές και Μέθοδοι Αξιολόγησης στις Αναπνευστικές Παθήσεις. Αθήνα: Εκδόσεις Κωσταντάρας, 2023.
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2. Journal of the Association of Chartered Physiotherapists in Respiratory Care https://www.acprc.org.uk/research-publications/journal/
3. Journal of respiratory physical therapy https://www.jstage.jst.go.jp/browse/kokyurigakuryohogaku/-char/en
4. Cardiopulmonary Physical Therapy Journal https://www.aptacvp.org/cardiopulmonary-physical-therapy-journal
5. Americal Journal of Preventive Cardiology https://www.sciencedirect.com/journal/american-journal-of-preventive-cardiology
1. Pneumon https://www.pneumon.org/