COURSE OUTLINE: CLINICAL NEUROLOGICAL PHYSIOTHERAPY I

1. GENERAL

SCHOOL	SCHOOL OF HEALTH SCIENSES		
ACADEMIC INIT	PHYSIOTHERAPY		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	**PHF2**	**SEMESTER**	**6th**
COURSE TITLE	**CLINICAL NEUROLOGICAL PHYSIOTHERAPY 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:	ADULT NEUROLOGICAL 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_213/ https://eclass.uth.gr/courses/PHYSIO_U_226/

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. Interprets the pathological mechanisms of postural, movement, and balance disorders as they manifest in neurological patients.
2. Recognizes the importance of physiotherapeutic assessment, understands, records, interprets, and manages the findings of subjective, objective, and laboratory evaluations in the clinical setting.
3. Reassesses and redefines the physiotherapeutic intervention.
4. Combines clinical experience with evidence-based knowledge (linking theory to clinical practice).
5. Sets goals, prioritizes them, and develops a rehabilitation plan.
6. Understands and comprehends the special relationships between the patient, therapist, and family.

Learning Outcomes of the Clinical Part:

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

1. Thoroughly studies the patient's medical record and interprets the findings of clinical and laboratory examinations. Evaluates and records the clinical presentation, monitors the therapeutic progress, and maintains the patient's file.
2. Develops a rehabilitation plan by setting short-term and long-term goals.
3. Determines the type and interprets the impact of physiotherapeutic intervention on neurological patients at different stages of rehabilitation and in various clinical settings (ICU, hospital wards, rehabilitation centers, physiotherapy clinics, etc.).
4. Selects appropriate physiotherapeutic techniques and modalities, interpreting their effects.
5. Assesses the outcome of the therapeutic intervention based on sound clinical reasoning.
6. Communicates effectively, establishing trust and a sense of security with patients.
7. Collaborates professionally within the framework of the interdisciplinary team.
8. Respects ethical principles and medical confidentiality.

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: Introduction to Clinical Neurological Physiotherapy

- The role of physiotherapy in the rehabilitation of neurological disorders. Principles, scope, objectives, ethical and deontological rules – medical confidentiality. Interdisciplinary approach.

Unit 2: Structure and Organization of Clinics and Rehabilitation Units for Neurological Patients

- The role and mission of physiotherapy.
- Responsibilities of the physiotherapist in the ICU, clinics, rehabilitation centers (chronic disease institutions), physiotherapy clinics, etc. Relations with other specialties. Organization

and equipment of physiotherapy facilities.

Unit 3: Neurological Patient Assessment

- The evaluation process of neurological patients. Assessment tests (categories). Subjective – objective evaluation. Consideration of findings.
- Physiotherapeutic evaluation in the ICU, clinics, rehabilitation centers (chronic disease institutions), physiotherapy clinics, and home settings – special considerations.
- Special considerations in the evaluation of specific populations (newborns, infants, elderly, intellectual disabilities, neoplastic diseases, etc.). Physiotherapeutic assessment at different rehabilitation stages (initial stage – recovery stage – chronic stage).

Unit 4: Motor Disability, Quality of Life, Self-Care, and Autonomy

- Factors improving the quality of life for individuals with motor disabilities.
- Accessibility and ergonomics in the living environment of individuals with motor disabilities (home, workplace).
- Assistive devices (categories, types, utility), orthotic devices, and environmental adaptation to the specific needs of the patient.
- Urinary and bowel disorders and their management. Sexual life and disability.

Unit 5: Physiotherapy for Neurological Patients in Different Clinical Settings

- Special considerations in physiotherapeutic interventions in the ICU, clinics, rehabilitation centers (chronic disease institutions), physiotherapy clinics, and home settings.
- Principles and special considerations of physiotherapeutic interventions at different rehabilitation stages.

Unit 6: Basic Principles of Physiotherapeutic Intervention in Different Age Groups and Special Populations – Special Considerations

- The neurological pediatric patient and their specificities. Basic principles of physiotherapeutic approaches during the neonatal, infant, toddler, preschool, school-age, and adolescent periods.
- Elderly population. Basic principles of physiotherapeutic approaches. Higher cortical function disorders.
- Psychiatric diseases. Psychomotor disorders. The psychological factor in rehabilitation – psychological profile.
- Family – physiotherapist relationships.

Unit 7: Patients with Multiple Disabilities

- Management of patients with multiple disabilities – goal setting – prioritization (presentation of individual cases).

Unit 8: Designing Rehabilitation Programs for Neurological Patients

- Setting therapeutic goals (short-term – long-term) at different rehabilitation stages (treatment scenarios).
- Objectivity and adaptability of rehabilitation programs.

Unit 9: Methods and Techniques of Physiotherapeutic Intervention

- The impact of different methods and techniques on muscle weakness, muscle tone, movement coordination, somatosensation, balance, and gait (presentation of individual cases).
- Selection criteria – rationale.

Unit 10: The Contribution of Technology in the Rehabilitation of Neurological Patients

- Modern therapeutic intervention tools for managing disorders of muscle tone, proprioception, coordination, balance, and gait (treadmill, balance platform, FES, computer-based – robotic systems, virtual reality systems, etc.).

Unit 11: Management of Muscle Tone Disorders

- Identification and management of muscle tone disorders in different patient categories –

lesions at various rehabilitation stages.

- Selection of therapeutic means – techniques for addressing muscle tone disorders (classical therapeutic methods – modern approaches) (presentation of individual cases).

Unit 12: Management of Coordination, Balance, and Gait Disorders

- Identification and management of coordination, balance, and gait disorders in different patient categories – lesions at various rehabilitation stages (presentation of individual cases).
- Selection of therapeutic means – techniques for addressing coordination, balance, and gait disorders (classical therapeutic methods – modern approaches).

Unit 13: Clinical Reasoning and Problem-Solving in Neurological Rehabilitation – Bridging Theory and Practice

- The process of clinical reasoning and decision-making in neurological rehabilitation. Decision-making models, reasoning, and problem-solving strategies.

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: Physiotherapeutic Assessment at Different Stages of Rehabilitation

- Physiotherapeutic assessment of patients in the ICU, clinics, rehabilitation centers, physiotherapy practices, etc. Assessment at each stage of rehabilitation. Performance recording.
- Maintenance of medical records – documentation of therapeutic progress.
- Student evaluation.

Unit 2: Differential Assessment of Neurological Patients Based on the Type of Disorder

- Physiotherapeutic assessment of patients with upper and lower motor neuron lesions, extrapyramidal lesions, cerebellar lesions, etc. Differentiation – differential diagnosis.
- Assessment of special population groups (infants, children, elderly, etc.).
- Student evaluation.

Unit 3: Management and Treatment of Muscle Tone Disorders

- Management of muscle tone disorders in upper and lower motor neuron lesions, extrapyramidal disorders, etc.
- Practical application of therapeutic techniques and interventions in different clinical settings, age groups, and treatment stages.
- Student evaluation.

Unit 4: Management and Treatment of Neuromuscular Coordination and Balance Disorders

- Management of neuromuscular coordination and balance disorders in different types of lesions.
- Practical application of therapeutic techniques and interventions in different clinical settings, age groups, and treatment stages.
- Student evaluation.

Unit 5: Gait Retraining in Neurological Patients

- Gait retraining for various neurological disorders and lesions of the nervous system (CNS, PNS, etc.).
- Practical application of therapeutic techniques and gait retraining interventions in different clinical settings, age groups, and treatment stages. Use of assistive devices (orthoses, braces, crutches, etc.).
- Student evaluation.

Unit 6: Management and Treatment of Muscle Weakness

- Management of muscle weakness in various neurological conditions and lesions of the nervous system (including neuromuscular diseases).
- Practical application of therapeutic techniques and interventions to enhance muscle strength in different clinical settings, age groups, and treatment stages.

- Student evaluation.

Unit 7: Management and Treatment of Sensory-Perceptual Deficits

- Management of sensory-perceptual deficits in neurological patients (sensory deficits in vision, hearing, kinesthesia, tactile recognition, spatial orientation, etc.).
- Practical application of therapeutic techniques and interventions in different clinical settings, age groups, and treatment stages.
- Student evaluation.

Unit 8: Mobilization and Transfer of Neurological Patients

- Practical application of mobilization techniques in different clinical settings and age groups according to the stage of rehabilitation.
- Transfer of neurological patients: Techniques and means for facilitating repositioning and transitioning to different postures. Special considerations and limitations.
- Student evaluation.

Unit 9: Applied Use of Laboratory and Hospital Equipment

- Training in the use and practical application of laboratory, clinical, and physiotherapy equipment on patients.
- Student evaluation.

Unit 10: Use of Orthotic Devices, Prostheses, and Assistive Aids

- Training in the use of orthotic devices, prostheses, and assistive aids (self-care, mobility) for neurological patients.
- Student evaluation.

Unit 11: Application of Specialized Therapeutic Interventions in Neurological Patients

- Electrical stimulation techniques – TENS, neuromuscular electrical stimulation, FES.
- Biofeedback.
- Hydrotherapy.
- Treadmill training, suspension systems, balance platforms, etc.
- Student evaluation.

Unit 12: Application of Specialized Therapeutic Techniques in Neurological Patients

- Techniques for facilitating muscle activity and improving movement control: Tapping, stretching, compression, vibration, ice, vestibular stimulation, movement facilitation.
- Techniques for normalizing muscle tone and maintaining soft tissue elasticity: Stretching, bandaging, weight-bearing, positioning, pressure, vibration, ice, heat, massage, etc.
- Specialized techniques and exercises: Frenkel, Cawthorne-Cooksey, etc.
- Constraint-induced movement therapy (CIMT).
- Neural tissue mobilization – Neurodynamics.
- Student evaluation.

Unit 13: Treatment Planning and Therapeutic Framework Development

- Defining therapeutic strategies for problem-solving.
- System-based therapeutic approaches (intervention philosophies – physiotherapy methods). Functional goal-oriented approach, holistic approach, combined/selective approach, etc.
- Design of group therapeutic exercise programs.
- Clinical reasoning – evidence-based practice – justification of therapeutic choices.
- Student evaluation.

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. 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 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.*	<table><tr><th>Activity</th><th>Semester workload</th></tr><tr><td>Lectures</td><td>30</td></tr><tr><td>Clinical Practice</td><td>90</td></tr><tr><td>Independent Study</td><td>55</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td>Couse Total</td><td>175</td></tr></table>
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 by the instructors regarding the assignment, presentation, and application of the physiotherapeutic intervention, as well as daily assessment in the clinical setting through laboratory exercises and the recording of patient evaluation sheets by the students. In each lesson, the instructors evaluate the student's participation and their ability to adequately respond to the management of the clinical case presented. The effectiveness of the intervention used is assessed under the guidance of the instructor. Specifically, the examination is based on the student's ability to approach the patient, take a medical history, conduct the evaluation in the correct order, set short-term and long-term therapeutic goals, and apply the appropriate physiotherapeutic techniques. The student must have successfully completed a set of specific physiotherapeutic interventions covering all cardiovascular and respiratory physiotherapy techniques in each clinical setting in which they are engaged. The final examinations are oral, where the student is required to solve practical problems and perform the necessary procedures (e.g., apply bronchial clearance techniques to a patient with a respiratory condition and improve pulmonary ventilation, etc.). 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

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