



Greek Democracy  
University of Thessaly  
School of Health Sciences

# Program Curriculum

Physiotherapy Department  
MSc In Advanced Physiotherapy



University of Thessaly  
Department of Physiotherapy

Academic Year  
2022-2023

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**COURSE OUTLINE**  
**RESEARCH METHODOLOGY (MP11)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP11	<b>SEMESTER OF STUDY</b>	A
<b>COURSE TITLE</b>	Research Methods		
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	<b>2</b>	<b>6</b>	
<i>Laboratory</i>	<b>2</b>	<b>2</b>	
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	PHYSIO_P_102		
<b>COURSE RESPONSIBLE</b>	Dr Nikolaos Strimpakos , Professor		
<b>PHONE/ EMAIL</b>	2231060203/ nikstrimp@uth.gr		

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**2. LEARNING OUTCOMES**

Learning results
<p><b>Upon successful completion of the course, the student will be able to:</b></p> <ol style="list-style-type: none"> <li>1) To understand the basic concepts, development and philosophy of research.</li> <li>2) Understand the importance of conducting research in physical therapy and the differences between qualitative and quantitative research.</li> <li>3) Understand the concept of the research problem (theoretical framework, literature review, field research, drawing conclusions).</li> <li>4) To organize and plan the individual phases of a master's level research taking into account research ethics and research limitations.</li> <li>5) To use computers and the internet to obtain scientific information as well as to process the data.</li> <li>6) To understand the problems and threats of published research and studies and to criticize them.</li> <li>7) To understand the ways of presenting the results of a research or overview (systematic review and meta-analysis) and writing a scientific article.</li> <li>8) To understand the role, importance and scope of use of biostatistics in the collection, organization and analysis of data in the field of health.</li> </ol>

- 9) To understand the basic concepts of Biostatistics as well as the various fields of application in the field of Physiotherapy.
- 10) Recognize the differences and characteristics of descriptive, inductive, parametric and non-parametric statistics and apply the corresponding tests to the analysis of research results.
- 11) To understand, apply and interpret the results of modern statistical methods for the design and analysis of various experimental and epidemiological studies.
- 12) Know the role of using complex statistical methods to interpret medical data and the interaction between variables.
- 13) To use computers and corresponding statistical software for data management and analysis.

#### General & Special Skills

The course aims to develop the following **general** skills:

- Search, analysis and synthesis of data and information, using the necessary technologies
- Decision making
- Autonomous work
- Teamwork
- Generating new research ideas
- Exercise criticism and self-criticism
- Promotion of free, creative and inductive thinking

The course aims to develop the following **specific** skills:

- Competence regarding the content of the research process
- Ability to formulate a research question, collect and analyze data and present results and conclusions
- Ability to carry it scientific knowledge and research in clinical practice

### 3. COURSE CONTENT

#### Theoretical part:

1. Science - research. Basic principles and ideas. The role of theory in research. Research in physical therapy.
2. Research question (sources - criteria). Research design (types of research). Research case. Research proposal. Pilot research.
3. Ethics in research. Plagiarism. Data manipulation.
4. Types of reliability. Reliability assessment. Validity types. Validity assessment.
5. Sampling. Sample size. Statistical power.
6. Types of quantitative research. Research Design. Threats. Threat control.
7. Basic concepts of statistics. Variables, measurement scales. Sample collection. Statistical tables & charts Statistical measures of position, dispersion and distribution of data.
8. Research Proposal (research project) tutoring.
9. Confidence intervals. Hypothesis tests (Parametric-Non-parametric).
10. Parametric and non-parametric linear correlation coefficient. Simple linear regression.
11. Covariance of two variables, analysis of variance (ANOVA).
12. Types of qualitative research. Focus groups. Questionnaires - interviews - Cross-cultural adaptation of questionnaires - measurement tools.
13. Systematic review – meta-analysis.

#### Laboratory part:

1. Databases. General – Special. Keywords.
2. Databases. General – Special. Types of articles - studies – publications.
3. Quality assessment scales. Pedro scale.
4. Article quality assessment.
5. References. Bibliography softwares.

6. Introduction to the use of statistical programs (applications of descriptive methods: Tables-Diagrams-Statistical measures).
7. Research design exercises.
8. Presentation of research results I.
9. Presentation of research results II.
10. Applications of confidence intervals and hypothesis testing using statistical programs.
11. Applications of analysis of variance using statistical programs.
12. Applications of correlation-regression using statistical programs.
13. Synoptic oral presentation of a research proposal in Powerpoint format.

#### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%														
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector, video, and ICT (e-class, email, MS Teams, google docs) in teaching and communicating with students.														
<b>TEACHING ORGANIZATION</b>	<table border="1"> <thead> <tr> <th><i>Activity</i></th> <th><i>Semester Workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures / Workshop / Interactive teaching</td> <td>52</td> </tr> <tr> <td>Independent Study &amp; article analysis</td> <td>80</td> </tr> <tr> <td>Elaboration of work study</td> <td>20</td> </tr> <tr> <td>Written assignments</td> <td>28</td> </tr> <tr> <td>Correction of tasks</td> <td>20</td> </tr> <tr> <td><b>Total Course</b> (25 workload hours per credit unit)</td> <td><b>200</b></td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester Workload</i>	Lectures / Workshop / Interactive teaching	52	Independent Study & article analysis	80	Elaboration of work study	20	Written assignments	28	Correction of tasks	20	<b>Total Course</b> (25 workload hours per credit unit)	<b>200</b>
	<i>Activity</i>	<i>Semester Workload</i>													
	Lectures / Workshop / Interactive teaching	52													
	Independent Study & article analysis	80													
	Elaboration of work study	20													
	Written assignments	28													
	Correction of tasks	20													
<b>Total Course</b> (25 workload hours per credit unit)	<b>200</b>														
<b>STUDENT EVALUATION</b>	<p>The evaluation of the students in the theoretical part of the course is carried out in accordance with the regulation of the MSc and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the individual work (35%). Written exams include Multiple Choice Tests, and Analytical/Combined Response Questions. The laboratory part of the course is evaluated by the average of six (6) assignments (individual and group). Each assignment must have at least a grade of five (5) on the ten -point scale to be considered successful.</p> <p>Tasks include:  Theory: one (1) individual research proposal paper of approximately 5000 words  Workshop: six (6) assignments of which three (3) assignments are done in groups (in groups of 2-3 people) and three (3) individually, submitted through e-class at a predetermined time to be checked for plagiarism by Turnitin plagiarism software. One of the tasks of the workshop is presented orally to public (8' minute presentation) and is evaluated both by the course leader and by the students based on specific evaluation criteria that are accessible by the students (listed in the presentation of their work).</p>														

#### 5. RECOMMENDED-BIBLIOGRAPHY

- Suggested Bibliography:

1. Hicks C. *Research Methods for Clinical Therapists, 4th edition*, Churchill Livingstone Publications, 2004
2. Sim J. and Wright C. *Research in Health Care, Stanley Thornes Publications*, 2000
3. Polgar S. and Thomas SA *Introduction to Research in the Health Sciences, 5 n edition*, Churchill Livingstone Publications, 2008
4. Thomas, J., Nelson, J. *Research Methods in Physical Activity, Paschalidis Publications*, 2003
5. Zafeiropoulos K. *How is a scientific paper done? Scientific research and writing papers, Kritiki Publications*, 2005
6. Kampitsis X. *The Research in Sports Sciences, Tsartsiani Publications, Thessaloniki*, 2004.
7. Bowers, D. *Fundamental concepts in biostatistics*, P. X. Paschalidis Medical Publications, 2011
8. Pagano M. and Gauvreau K. *Principles of biostatistics*, Hellenic Publications, 2002
9. Trichopoulos D., Tzonou A. and Katsougianni K. *Biostatistics. Parisianos Publications*, 2000
10. Kirkwood B. and Sterne J. *Essentials of Medical Statistics. Blackwell Science*, 2003
11. Field A. *Discovering Statistics using IBM SPSS Statistics, 4 h edition*, Sage Publication, 2013.

- Related scientific journals:

1. *Research Methods in Medicine & Health Sciences*, <https://journals.sagepub.com/home/rmm>
2. *BMC Medical Research Methodology*, <https://bmcmmedresmethodol.biomedcentral.com/>
3. *Research Methods*, <https://methods.sagepub.com/>

**COURSE OUTLINE**  
**ASSESSMENT OF HUMAN MOVEMENT & FUNCTION (MP12)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP12	<b>SEMESTER OF STUDY</b>	A
<b>COURSE TITLE</b>	Assessment of Human Movement & Activity		
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	2	6	
<i>Laboratory</i>	2	2	
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	<a href="#">PHYSIO P 101</a>		
<b>COURSE RESPONSIBLE</b>	Dr Asimakis K. Kanellopoulos, Assistant Professor		
<b>PHONE/ EMAIL</b>	2231060234/ <a href="mailto:akanellopoulos@uth.gr">akanellopoulos@uth.gr</a>		

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**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
<ol style="list-style-type: none"> <li>1) To know the means and techniques of recording and analyzing human movement &amp; activity. To be able to choose the most appropriate of them for each clinical or research question.</li> <li>2) To be able to understand and critically comment on relevant scientific - research results and texts concerning human movement.</li> <li>3) To record and analyze in detail, validly and reliably human movement and activity and their individual characteristics, using the necessary equipment for laboratory evaluation.</li> </ol>	
<b>General &amp; Special Skills</b>	
<p>The course aims to develop the following <b>general</b> skills:</p> <ul style="list-style-type: none"> <li>• Searching for the best way to assess human movement</li> <li>• Searching for the best human motion assessment tools</li> <li>• Decision making</li> <li>• Autonomous work</li> <li>• Generating new research ideas</li> <li>• Promotion of free, creative and inductive thinking</li> </ul>	<p>The course aims to develop the following <b>specific</b> skills:</p> <ul style="list-style-type: none"> <li>• Ability to analyze and evaluate the signal recorded by tools for measuring the kinetic characteristics of human movement.</li> <li>• Ability to analyze and evaluate the signal recorded by tools for measuring the kinematic characteristics of human movement.</li> <li>• Ability to analyze and evaluate the signal recorded by force measuring instruments.</li> </ul>

- Ability to analyze and evaluate the Electromyographic signal.
- Ability to carry scientific knowledge and research through all of the above in clinical practice.

### 3. COURSE CONTENT

#### Theoretical part:

1. Fundamentals of Human Movement and Activity - Engineering Laws Governing Human Movement.
2. Signal- analog & Digital signal Digitization - Signal processing.
3. Methods of recording and evaluating Kinetic characteristics I.
4. Methods of recording and evaluating Kinetic characteristics II.
5. Methods of recording and evaluating strength - Isokinetics I.
6. Methods of recording and evaluating strength – Isokinetics II.
7. Methods of recording and evaluating muscle activity - EMG I.
8. Methods of recording and evaluating muscle activity - EMG II.
9. Tutoring on assignments.
10. Measurement of muscle fatigue and proprioception.
11. Temporal & spatial parameters of movement. Methods of recording and evaluating Kinetic characteristics I.
12. Anthropometry. Methods of recording and evaluating Kinetic characteristics II.
13. Methods of recording and evaluating human balance.

#### Laboratory part:

1. Introduction to the laboratory - mode of operation - regulations – safety.
2. Measurement of Kinetic Characteristics I – Gait.
3. Measurement of Motor Characteristics II – jumping, running, clinical cases.
4. Force Measurement – Isokinetics I.
5. Isokinetics II – analysis of clinical cases.
6. Measurement of muscle activity - EMG I.
7. EMG II – analysis of clinical cases.
8. Measurement of Proprioception and muscle fatigue – clinical examples.
9. Functional tests of human movement assessment.
10. Introduction to the complexities of measuring kinematic characteristics – Measurement tools.
11. 3Dimensional measurement of kinematic characteristics with infrared cameras I.
12. 3D measurement of kinematic features with infrared cameras II – clinical examples.
13. Measuring Human Balance.



#### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector , video , and ICT (eclass , email, MS Teams , google docs ) in teaching and communicating with students	
<b>TEACHING ORGANIZATION</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures / Workshop / Interactive teaching	52
	Independent Study & article analysis	80
	Elaboration of work study	30
	Writing assignments	38
	Total Course (25 workload hours per credit unit)	<b>200</b>
<b>STUDENT EVALUATION</b>	<p>The evaluation of the students in the theoretical part of the course is carried out in accordance with the regulation of the MSc. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the individual work (35%). Written exams include Multiple Choice Tests, and Analytical/Combined Answer Questions. The laboratory part of the course is evaluated by the average of the three (3) assignments (individual). Each assignment must have at least a grade of five (5) on the ten -point scale to be considered successful.</p> <p>Tasks include:  Theory: one (1) individual research proposal paper of approximately 5000 words. There is feedback for students in a personal message about their mistakes.  Lab: three (3) individual assignments, submitted through e-class at a predetermined time to be checked for plagiarism by Turnitin plagiarism software. There is feedback for students in a personal message about their mistakes.</p>	

#### 5. RECOMMENDED - BIBLIOGRAPHY

<p>- Proposed Bibliography :</p> <ol style="list-style-type: none"> <li>1. David A. Winter (2009): "Biomechanics and Motor Control of Human Movement". Wiley, New Jersey.</li> <li>2. Gordon Robertson, Graham Caldwell, Joseph Hamill, Gary Kamen, Saunders Whittlesey (2004): "Research Methods in Biomechanics". Human Kinetics.</li> <li>3. Nihat zkaya , Margareta Nordin , David Goldsheyder , Dawn Leger (2012): "Fundamentals of Biomechanics: Equilibrium, Motion, and Deformation". Springer.</li> <li>4. Aydin Tzeren (2000): "Human Body Dynamics: Classical Mechanics and Human Movement". Springer.</li> <li>5. Vladimir Zatsiorsky (2002): "Kinetics of Human Motion". Human Kinetics.</li> <li>6. Jacquelin Perry, Judith Burnfield (2010): "Gait Analysis: Normal and Pathological Function". Slack Incorporated.</li> </ol>
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7. David Levine, Jim Richards, Michael W. Whittle (2012): "Whittle's Gait Analysis". Churchill Livingstone.
8. Bodo Rosenhahn , Reinhard Klette , Dimitris Metaxas (2010): "Human Motion: Understanding, Modeling, Capture, and Animation". Springer.
9. Gary T. Yamaguchi (005): "Dynamic Modeling of Musculoskeletal Motion: A Vectorized Approach for Biomechanical Analysis in Three Dimensions". Springer.
10. James Morrow Jr., Allen Jackson, James Disch , Dale Mood (2010): "Measurement and Evaluation in Human Performance". Human Kinetics

- Related scientific journals:

1. Journal of biomechanics, <https://www.sciencedirect.com/journal/journal-of-biomechanics>
2. Clinical Biomechanics, <https://www.journals.elsevier.com/clinical-biomechanics>
3. Gait & Posture, <https://www.sciencedirect.com/journal/gait-and-posture>

**COURSE OUTLINE**  
**REHABILITATION OF MUSCULOSKELETAL DISORDERS (MP13)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP13	<b>SEMESTER OF STUDY</b>	A
<b>COURSE TITLE</b>	Rehabilitation of Musculoskeletal Disorders		
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	<b>2+1</b>	<b>7</b>	
<i>Laboratory</i>			
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	PHYSIO_P_103		
<b>COURSE RESPONSIBLE</b>	Dr Ioannis Poulis, Associate Professor		
<b>PHONE/ EMAIL</b>	2231060205/ <a href="mailto:ipoulis@uth.gr">ipoulis@uth.gr</a>		

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**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
<ol style="list-style-type: none"> <li>1. Demonstrates the ability to integrate such a theoretical as well as practical way to use these skills with a holistic approach for the benefit of the patient.</li> <li>1. Demonstrates advanced skills clinical reasoning for the application of the appropriate tools-means.</li> <li>2. Carry out 'safe' clinical evaluation and different strategies treatment and to be able to modify the treatment after the procedure evaluation.</li> <li>3. Understand chronic and acute diseases of the musculoskeletal system that require physical therapy.</li> <li>4. Demonstrate a critical understanding of the current basis elements documentation for management various musculoskeletal diseases.</li> <li>5. Show off effective communication with the patient, to collect, analyze and record information regarding the type and nature of his problem.</li> <li>6. Understand and integrate into his clinical reasoning the properties and peculiarities of collagen tissue.</li> <li>7. Organize a program of therapeutic exercise based on evidence knowledge.</li> </ol>	
<b>General &amp; Special Skills</b>	
The course aims to develop the following <b>general</b> skills:	The course aims to develop the following <b>specific</b> skills:

- Development of the clinical reasoning.
- Implement decisions based on optimality, contemporary practices and keep records of the physical therapy practice.
- Quantification of functional deficits
- Analysis of finding a way measuring and displaying the results.
- Optimize and advance methodology, development of the therapeutic intervention.
- Optimize intervention effectiveness.
- Selection of appropriate clinical tools.
- Reflect & correct justification of choice means and methods.
- Continued emphasis on evidence -based physical therapy practice (evidence based practice).

### 3. COURSE CONTENT

1. Introduction to Evidence-Based Physical Therapy Practice. The example of back pain.
2. Collagen tissue I. Behavior of collagen tissue.
3. Collagen tissue II. Clinical examples, the relationship of collagen to the program restoration.
4. Cartilage diseases. Therapeutic exercise.
5. Clinical reasoning and informed physical therapy practice Evaluation and rehabilitation of rotator cuff pathology of the shoulder.
6. Tendon Diseases, Loads, Mechanical therapy.
7. Tendon Diseases, Clinical examples: tennis elbow, patellar tendinopathy.
8. Groin Pain: Introduction.
9. Groin Pain: Evaluation and Rehabilitation. Criteria of tools and methods selection.
10. Distance guidance – Assignments.
11. Isokinetics in rehabilitation.
12. Muscle injuries: Patient evaluation and measure treatment effectiveness.
13. Presentation of assignments.

### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector , video , and ICT ( eclass , email, MS Teams , google docs ) in teaching and communicating with students	
<b>TEACHING ORGANIZATION</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures / Interactive teaching	39
	Independent Study & article analysis	80
	Elaboration of work study	20
	Writing assignments	36
	<b>Total Course (25 workload hours per credit unit)</b>	<b>175</b>

<b>STUDENT EVALUATION</b>	<p>The evaluation of the students is carried out in accordance with the regulation of the P.M.S. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the assignments (35%). Written exams include Multiple Choice Tests, and Analytical/Combined Response Questions.</p> <p>The work is submitted through e-class at a predetermined time to be checked for plagiarism by Turnitin plagiarism software and presented by the students at the end of the course (Section 13).</p>
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## 5. RECOMMENDED-BIBLIOGRAPHY

### - Suggested Bibliography:

1. *Hoogenboom B, Voight M, Prentice W, Musculoskeletal Interventions McGraw-Hill Medical; 2nd ed ., 2013.*
2. *Goodman CC, Snyder TEK, Differential Diagnosis for Physical Therapists: Screening for Referral, 5th ed , Elsevier, St Louis Missouri, 2012.*
3. *Herbert R, Jamtvedt G, Mead J, Birger Hagen K, Practical Evidence-Based Physiotherapy, Elsevier, Edinburgh, 2nd ed 2011.*
4. *Jewell D, Guide to Evidenced-Based Physical Therapist Practice, Jones & Bartlett Learning, 2nd ed 2011.*
5. *Greenhalgh T, How to Read a Paper: The Basics of Evidence-Based Medicine Wiley-Blackwell; 4th ed ., 2010.*
6. *Higgs J, Jones MA, Loftus S, Christensen N, Clinical Reasoning in the Health Professions, Butterworth-Heinemann; 3rd ed 2009.s*

### - Related scientific journals:

1. *Journal of Orthopedic & Sports Physical Therapy, <https://www.jospt.org>*
2. *Physical Therapy and Rehabilitation Journal, <https://academic.oup.com/ptj/article/100/12/2077/5973424>*

**COURSE OUTLINE**  
**MOTOR CONTROL AND MOTOR LEARNING IN REHABILITATION (MP14)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP14	<b>SEMESTER OF STUDY</b>	A
<b>COURSE TITLE</b>	Motor Control and Motor Learning in Rehabilitation		
<b>SELF-ENDED TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	<b>2+1</b>	<b>7</b>	
<i>Laboratory</i>			
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	PHYSIO_P_104		
<b>COURSE RESPONSIBLE</b>	Dr Eleni V. Kapreli , Professor		
<b>PHONE/ EMAIL</b>	2231060125/ ekapreli@uth.gr		

**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
<ol style="list-style-type: none"> <li>1) Critically discuss the neurophysiological mechanisms that ensure motor control, motor learning and neuroplasticity.</li> <li>2) Assess the mechanisms through which pathology may disrupt motor control and quality of human movement.</li> <li>3) Critically discuss the theories and parameters of motor learning.</li> <li>4) Practically use the mechanisms of learning and establishing motor skills in the rehabilitation of patients.</li> <li>5) Plans and adapts his/her instructions to meet the different needs of patients.</li> <li>6) Critically discuss motor learning techniques and methods with application in clinical practice.</li> <li>7) Use motor learning techniques and methods practically in the rehabilitation of patients.</li> <li>8) Process scientific theories and research results and apply them in designing patient rehabilitation programs.</li> </ol>	
<b>General &amp; Special Skills</b>	
The course aims to develop the following <b>general</b> skills:	The course aims to develop the following <b>specific</b> skills:
<ul style="list-style-type: none"> <li>● Search, analysis and synthesis of</li> </ul>	<ul style="list-style-type: none"> <li>● Competence about the content of</li> </ul>

<ul style="list-style-type: none"> <li>• Decision making</li> <li>• Autonomous work</li> <li>• Teamwork</li> <li>• Generating new research ideas</li> <li>• Exercise criticism and self-criticism</li> <li>• Promotion of free, creative and inductive thinking</li> </ul>	<p>data and information, using the necessary technologies</p> <ul style="list-style-type: none"> <li>• Ability to implement it</li> <li>• Patient communication</li> </ul> <p>knowledge scientific knowledge in clinical practice</p>
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### 3. COURSE CONTENT

<ol style="list-style-type: none"> <li>1. Introduction to motor control and motor skill, motor skill classification models.</li> <li>2. Neurophysiological Mechanisms of Motor Control, Neuromuscular Synapse, Perceptual and Executive Systems.</li> <li>3. Kinetic Control theories and systems.</li> <li>4. Assessment of motor control - methodological design.</li> <li>5. Neurophysiological mechanisms of impaired motor control after injury/pathology, factors causing dysfunction, mechanisms of neuroplasticity.</li> <li>6. Definition of motor learning, memory and stages of learning, techniques in rehabilitation.</li> <li>7. Remote task guidance.</li> <li>8. Motor learning applications in rehabilitation: Motivation, attention, feedback.</li> <li>9. Assessment of motor learning - methodological design.</li> <li>10. Applications of motor learning in rehabilitation: Organizing sessions.</li> <li>11. Study of various new techniques and methods of motor learning I: mirror therapy, biofeedback, constraint induced movement therapy.</li> <li>12. Study of various new motor learning techniques and methods II: Non-invasive Cerebral Stimulation, Virtual Reality, Robotics, Video Games.</li> <li>13. Study of various new techniques and methods of motor learning III: Mental Practice.</li> </ol>
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### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector , video , and ICT ( eclass , email, MS Teams , google docs ) in teaching and communicating with students	
<b>TEACHING ORGANIZATION</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures / Interactive teaching	39
	Independent Study & article analysis	80
	Elaboration of work study	11
	Writing assignments	25
	Correction of tasks	20
	Total Course (25 workload hours per credit unit)	<b>175</b>

<b>STUDENT EVALUATION</b>	<p>The evaluation of the students is carried out in accordance with the regulation of the P.M.S. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the assignments (35%). Written exams include Multiple Choice Tests, and Analytical/Combined Response Questions.</p> <p>Assignments (3 assignments) are done in groups (in groups of 2-3 people), submitted via eclass at a predetermined time to be checked for plagiarism by Turnitin plagiarism software. The assignments are graded both by the course manager and by the students based on specific evaluation criteria that are accessible by the students (listed in the presentation of their assignment).</p>
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## 5. RECOMMENDED-BIBLIOGRAPHY

### - Suggested Bibliography:

1. Anne Shumway-Cook, Marjorie H Woollacott , Jaya Rachwani , Victor Santamaria (2022) *Motor Control: Translating Research into Clinical Practice Sixth, North American Edition*, LWW
2. Cohen, H. (1998) *Neuroscience for Rehabilitation (2nd edition)* London, Lippincott Williams & Wilkins.
3. Edwards W. (2010) *Motor Learning and Control: From Theory to Practice*. Cengage Learning .
4. Latash M. and Lestienne F. (2006) *Motor control and learning*, Springer
5. Lundy-Ekman, L. (2017) *Neuroscience: Fundamentals for Rehabilitation (5th edition)* Oxford, Saunders.
6. Magill R (2020) *Motor Learning and Control: Concepts and Applications (12th edition)*, McGraw-Hill Humanities
7. Schmidt, RA and Lee, T. (2018) *Motor Control and Learning - 6th Edition: A Behavioral Emphasis Human Kinetics*

### - Related scientific journals:

1. *Motor Control*, <https://journals.humankinetics.com/view/journals/mcj/mcj-overview.xml>
2. *International Journal of Motor Control and Learning*, <https://ijmcl.com/>
3. *Perceptual and Motor Skills*, <https://journals.sagepub.com/home/pms>



**COURSE OUTLINE**  
**CLINICAL NEUROSCIENCE AND REHABILITATION (MP21)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Master's Degree Program		
<b>LESSON CODE</b>	MP21	<b>SEMESTER OF STUDY</b>	B
<b>COURSE TITLE</b>	Clinical Neuroscience and Rehabilitation		
<b>SELF-ENDED TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	<b>2</b>	<b>6</b>	
<i>Laboratory</i>	<b>2</b>	<b>2</b>	
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	<a href="#">GD-LAMIA110</a>		
<b>COURSE RESPONSIBLE</b>	Dr George Paras, Assistant Professor		
<b>PHONE/ EMAIL</b>	2231060234 / <a href="mailto:gparas@uth.gr">gparas@uth.gr</a>		

**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
<ol style="list-style-type: none"> <li>1) Interprets the nature and function of the Nervous System, the Control Mechanisms of Mobility and the Recovery of Motor Function.</li> <li>2) Study and analyzes the theoretical, research and clinical parameters in dealing with disorders of the nervous system.</li> <li>3) Selects the correct diagnostic means – tools for assessment and measurement, depending on the type of pathology.</li> <li>4) Develops critical thinking, to analyze and interpret the basic principles of the various Treatment Systems and the mechanisms of effect of therapeutic means and techniques on the basis of scientifically based knowledge and clinical practice.</li> <li>5) Defines the Conceptual - therapeutic framework, designs rehabilitation programs and solves a variety of problems based on sound clinical reasoning.</li> <li>6) Work collaboratively with health professionals of other specialties within the framework of the interdisciplinary approach.</li> </ol>	
<b>General &amp; Special Skills</b>	
<p>The course aims to develop the following <b>general</b> skills:</p> <ul style="list-style-type: none"> <li>• Search, analysis and synthesis of data and information, using the necessary technologies</li> <li>• Decision making</li> </ul>	<p>The course aims to develop the following <b>specific</b> skills:</p> <ul style="list-style-type: none"> <li>• Ability to connect scientifically documented theoretical knowledge with clinical practice</li> <li>• Ability to develop correct clinical reasoning on the basis of cases</li> </ul>

- Autonomous work
- Teamwork
- Generating new research ideas
- Exercise criticism and self-criticism
- Promotion of free, creative and inductive thinking
- Ability to analyze and interpret motor behavior
- Interdisciplinary Approach

### 3. COURSE CONTENT

#### Theoretical part :

1. Neuroscience and Neurorehabilitation up today.
2. The Nervous System. Neural Organization, Neuroplasticity and Levels of Processing.
3. Neurological Rehabilitation - Theoretical Background (neurophysiological mechanisms, motor control and learning).
4. Clinical Observation, Assessment and Measurement in Neurological Physiotherapy.
5. Treatment Planning - Defining a Therapeutic Framework and Rehabilitation Program.
6. The New Technologies in the Service of Neurorehabilitation.
7. Study - Treatment of Muscle Tone Disorders and Muscle Weakness.
8. Study - Treatment of Neuromuscular Coordination, Balance and Gait Disorders.
9. Study - Treatment of Sensory, Cognitive and Perceptual Deficits.
10. Basic Principles of Rehabilitation in Different Age Groups and Special Populations – Particularities.
11. Management of Neurological Disorders in Different Clinical Settings.
12. The Interdisciplinary Approach to Neurorehabilitation.
13. Special Clinical Topics.

#### Laboratory part :

1. Neurological examination in lesions of different systems.
2. Assessment and recording of gait patterns of neurological patients.
3. Assessment of balance using devices.
4. Biomechanical assessment of the lower extremities.
5. Footprint – static and dynamic footprint analysis.
6. Evaluation of muscle tone disorders.
7. Tools (tests) for recording the patients' functional level.
8. Mobility and balance recording tools (tests).
9. Diagnostic tests in pediatric neurological physical therapy.
10. Special techniques of mobilization and control of the static function of neurological patients.
11. Clinical training – use of specific techniques on real patients.
12. Interactive systems – virtual reality.
13. Orthotics, mobility aids and support equipment.

### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING.</b>	Face-to-face, Hybrid education, Distance education at 20%
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<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector , video , and ICT (e -class , e- mail , MS Teams , google docs ) in teaching and communicating with students	
<b>TEACHING ORGANIZATION</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures / Workshop / Interactive teaching	52
	Independent Study & article analysis	80
	Elaboration of work study	30
	Writing assignments	38
	Total Course (25 workload hours per credit unit)	<b>200</b>
<b>STUDENT EVALUATION</b>	<p>The evaluation of the students is carried out in accordance with the regulation of the P.M.S. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the assignments (35%). The written exams include study questions - analysis of clinical cases and special topics regarding the science of Neurorehabilitation. Answers are interpreted based on sound clinical reasoning, principles of motor control/learning, and basic science. A prerequisite is the correct critical thinking and analytical approach.</p> <p>The work is done individually and concerns issues of special clinical interest. They are submitted through the e- class at a predetermined time to be checked for plagiarism by Turnitin plagiarism software. Assignments are graded by the course instructor. Emphasis is placed on the originality of the topic – research question and contribution to physical therapy clinical practice.</p>	

## 5. RECOMMENDED BIBLIOGRAPHY

### - Proposed Bibliography :

11. Car J., Shepherd R. (2003) Neurological Rehabilitation: Optimizing Motor Performance. Butterworth-Heinemann.
12. Lazaro R., Reina-Guerra S., Quiben M. (2019) Umphred's Neurological Rehabilitation, 7<sup>th</sup> edition. Elsevier.
13. Lennon S., Ramdharry G., Verheyden G. (2018) Physical Management in Neurological conditions. 4<sup>th</sup> edition, Elsevier.
14. Palisano R., Orlin M., Schreiber J. (2021) Campbell's Physical Therapy for Children. 5<sup>h</sup> English, 1<sup>h</sup> Greek Edition . Editions Paschalidis – Broken Hill.
15. Schmidt R., Lee T., Winstein C. (2018) Motor Control & Learning: A Behavioral Emphasis. 6<sup>th</sup> edition. Human Kinetics.
16. Shumway - Cook A ., Woollacott M. \_ (2012) Motor Control – From Research to Clinical Practice. 3<sup>rd</sup> edition. Broken Hill Publications.
17. Stokes Maria. (2004) Physical Management in Neurological Rehabilitation. Second edition. Elsevier, Mosby.

### - Related Scientific Journals:

1. Developmental Medicine & Child Neurology, <https://onlinelibrary.wiley.com/journal/14698749>

2. Journal of Neurorehabilitation, <http://www.medtextpublications.com/journal-of-neurorehabilitation-home.php>
3. Motor Control, <https://journals.humankinetics.com/view/journals/mcj/mcj-overview.xml>
4. Pediatric Physical Therapy, <https://journals.lww.com/pedpt/pages/default.aspx>

**COURSE OUTLINE**  
**REHABILITATION OF FUNCTIONAL PATHOLOGY OF THE MOTOR SYSTEM (MP22)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP22	<b>SEMESTER OF STUDY</b>	B
<b>COURSE TITLE</b>	REHABILITATION OF FUNCTIONAL PATHOLOGY OF THE MOTOR SYSTEM		
<b>SELF-ENDED TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	2	6	
<i>Laboratory</i>	2	2	
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	PHYSIO_P_106		
<b>COURSE RESPONSIBLE</b>	Dr Trigkas Panagiotis, Lecturer		
<b>PHONE/ EMAIL</b>	2231060222/ trigkas@uth.gr		

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**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
<ol style="list-style-type: none"> <li>1) To distinguish the structural from the functional pathology of the motor system.</li> <li>2) To understand the role of nervous control (CNS &amp; PNS) in the etiology &amp; treatment of functional pathology of the motor system.</li> <li>3) To assess &amp; treat joint dysfunction of peripheral &amp; spinal joints.</li> <li>4) To know the classification of chain reactions &amp; to understand their role in causing functional dysfunctions of the motor system.</li> <li>5) To understand the role of muscles in the etiopathogenesis of painful musculoskeletal syndromes, to know the clinical models of movement pattern disorders, classification &amp; muscle activation strategies of the trunk &amp; limbs.</li> <li>6) To understand and use in clinical reasoning, both individually and in combination, the structural as well as the functional approach for the evaluation and therapeutic intervention of functional dysfunctions of the motor system by designing, implementing &amp; supervising scientifically documented physical therapy programs.</li> </ol>	
<b>General &amp; Special Skills</b>	
The course aims to develop the following <b>general</b> skills:	The course aims to develop the following <b>specific</b> skills:

- Detection of the etiopathogenesis of functional pathology.
- Understanding the role & classification of chain reactions.
- Recognizing the clinical models of movement pattern disorder classification.
- Assessment, prioritization & treatment of motor system adaptations & maladaptations.
- Ability to apply trunk & limb muscle activation strategies.
- Motor control retraining according to modern scientific evidence-based practice.
- Prioritization, use & interaction of assessment findings to design the purpose-goals-means/techniques of the therapeutic intervention program.
- Promotion & improvement of short-medium-long-term prognosis regarding the outcome of motor dysfunction-disorder.
- Ability to plan-implement-supervise & progress scientifically proven physical therapy programs for movement disorders.
- Improving the ability to train, assign responsibility & control the patient's compliance index in the context of self-treatment.

### 3. COURSE CONTENT

#### Theoretical part:

1. Basic Principles of Functional Pathology of the Motor System: Structural vs Functional Approach.
2. Distinction of Intrinsic & Extrinsic Function. Distinguishing Normal & Pathological Function.
3. Approaches to Muscle Imbalance: biomechanical approach & neurological approach.
4. Definition, role, goals & modern trends of the restoration of motor control in painful musculoskeletal syndromes.
5. The Sensory-Motor System.
6. Remote task guidance
7. Neuromuscular Control of Postural & Joint Stability: Global & Local Mechanisms (Static Stability & Functional Joint Stability).
8. The Role & Function of Muscles in Painful Musculoskeletal Syndromes.
9. Basic Principles of Assessment & Treatment according to the Functional Approach. Electromyographic (EMG) & Clinical techniques.
10. Diaphragm and Lumbopelvic Motor Control: The effect of the static & stabilizing function of the diaphragm on Lumbopelvic Motor Control.
11. Back Pain & Functional Pathology: Fundamentals & interaction of motor control disorders & back pain induction. Therapeutic approaches to motor control.
12. Joint Mobilization Techniques: joint dysfunction of peripheral & spinal joints.
13. Kinesiotherapeutic training in Musculoskeletal Disorders.

#### Laboratory part:

1. Basic principles of assessment. Subjective evaluation.
2. Basic Assessment Principles: Observation of posture, muscle outline & morphology.
3. Basic Assessment Principles: Key points, observation, possible causes, frequent clinical findings, verification tests.
4. Basic Assessment Principles: balance & gait assessment.
5. Basic Assessment Principles: assessment of functional activities & respiratory pattern.
6. Evaluation of Motor Patterns & motor tests. Electromyographic (EMG) & Clinical techniques.
7. Assessment of muscle tension & soft tissues.
8. Assessment of Muscle and Joint Functional Chains.
9. Treatment: Normalization of peripheral structures. Local direct techniques.

10. Treatment: Normalization of muscle imbalance, retraining of motor patterns & sensorimotor stimulation.
11. Treatment: improvement of functional range (FR) & predominant functional pathology (FP).
12. Treatment: Joint Mobilization Techniques & therapeutic choice of degrees of mobilization.
13. Principles of Physiotherapy (Kinesiotherapy) Training: Variables, Design, Structure & Guidance of a Physiotherapy Program & Session.

#### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%												
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector , video , and ICT ( eclass , email, MS Teams , google docs ) in teaching and communicating with students												
<b>TEACHING ORGANIZATION</b>	<table border="1"> <thead> <tr> <th><i>Activity</i></th> <th><i>Semester Workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures / Workshop / Interactive teaching</td> <td>52</td> </tr> <tr> <td>Independent Study &amp; article analysis</td> <td>80</td> </tr> <tr> <td>Elaboration of work study</td> <td>30</td> </tr> <tr> <td>Writing assignments</td> <td>38</td> </tr> <tr> <td><b>Total Course (25 workload hours per credit unit)</b></td> <td><b>200</b></td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester Workload</i>	Lectures / Workshop / Interactive teaching	52	Independent Study & article analysis	80	Elaboration of work study	30	Writing assignments	38	<b>Total Course (25 workload hours per credit unit)</b>	<b>200</b>
	<i>Activity</i>	<i>Semester Workload</i>											
	Lectures / Workshop / Interactive teaching	52											
	Independent Study & article analysis	80											
	Elaboration of work study	30											
	Writing assignments	38											
<b>Total Course (25 workload hours per credit unit)</b>	<b>200</b>												
<b>STUDENT EVALUATION</b>	<p>The evaluation of the students in the theoretical part of the course is carried out in accordance with the regulation of the P.M.S. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the individual work (35%). Written exams include Multiple Choice Tests, and Analytical/Combined Answer Questions. The laboratory part of the course is evaluated by the average of the three (3) assignments (individual). Each assignment must have at least a grade of five (5) on the ten -point scale to be considered successful.</p> <p>Tasks include:  Theory: one (1) individual or group (2 students) paper of approximately 5000 words. The topic of the paper is selected from a bank of topics related to the course material available in the e- class. The assignment is submitted through e-class at a predetermined time &amp; checked for plagiarism by Turnitin plagiarism software. Grading is done according to known predetermined criteria &amp; feedback is given to the students with justification of the rating according to the criteria.  Laboratory: three small-scale (3) individual case-studies (clinical-laboratory content from a subject bank related to the laboratory material of the course present in the e- class), submitted through the e-class in a predetermined period of time, so that they can be checked for plagiarism from Turnitin. There is student feedback.</p>												

#### 5. RECOMMENDED - BIBLIOGRAPHY

- Proposed Bibliography :

1. Ancillao , A. (2018). *Modern Functional Evaluation Methods for Muscle Strength and Gait Analysis*. Verlag Berlin Heidelberg, Springer.
2. Durward, BR, Baer, GD & Rowe, PJ (1999). *Functional human movement: Measurements & analysis*. Oxford, Butterworth & Heineman .
3. Cook, G., Burton, L., Kiesel , K., Rose, G. & Bryant, M . (2010) *Movement: Functional Movement Systems: Screening, Assessment, Corrective Strategies*. Aptos, CA, On Target Publications.
4. Janda , V. (1983). *Muscle function testing*. Londo . Butterworths.
5. Lewitt , K., (2009). *Manipulative Therapy: Musculoskeletal Medicine*, London, Churchill Livingstone.
6. Mense , S. & Gerwin , RD (2010). *Muscle Pain: Diagnosis and Treatment*. Heidelberg, Dordrecht, London , New York , Springer .
7. Page, P., Frank, CC & Lardner, R. (2009). *Assessment and Treatment of Muscle Imbalance: The Janda Approach*. Champaign, IL, Human Kinetics.
8. Richardson, C., Hodges, P. & Hides, J. (2004). *Therapeutic exercise for lumbopelvic stabilization: A motor control approach for the treatment and prevention of low back pain (2nd ed.)* Edinburgh, Churchill & Livingstone.
9. Sahrmann , S. (2002). *Diagnosis and Treatment of Movement Impairment Syndromes*. St Louis, Mosby.
10. Sugi, H. (2018). *Mysteries in Muscle Contraction: Evidence against Current Dogmas*. Singapore, Pan Stanford Publishing.

- Related scientific journals:

1. *Journal of Electromyography and Kinesiology* <https://www.journals.elsevier.com/journal-of-electromyography-and-kinesiology>
2. *Journal of Orthopedic & Sports Physical Therapy*, <https://www.jospt.org/>
3. *Human Movement Science* <https://www.sciencedirect.com/journal/human-movement-science>



**COURSE OUTLINE**  
**PULMONARY AND CARDIOVASCULAR REHABILITATION (MP23)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP23	<b>SEMESTER OF STUDY</b>	B
<b>COURSE TITLE</b>	Pulmonary and Cardiovascular Rehabilitation		
<b>SELF-ENDED TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	<b>2 + 1</b>	<b>7</b>	
<i>Laboratory</i>			
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	<a href="#">PHYSIO P 108</a>		
<b>COURSE RESPONSIBLE</b>	Dr Eleni A. Kortianou , Associate Professor		
<b>PHONE/ EMAIL</b>	2231060246/ <a href="mailto:ekortianou@uth.gr">ekortianou@uth.gr</a>		

**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
<ol style="list-style-type: none"> <li>1) Demonstrates understanding and knowledge that underpins, extends and/or enhances knowledge associated with the management of pulmonary and cardiovascular disease</li> <li>2) Integrates knowledge and formulates decisions based on clinical reasoning.</li> <li>3) Apply knowledge to solve problems in new environments, in the context of wider interdisciplinary working conditions related to pulmonary and cardiovascular rehabilitation.</li> <li>4) Critically discusses the theories and current practices in the rehabilitation of chronic pulmonary and cardiovascular patients.</li> <li>5) Designs an individualized exercise program for the patient in pulmonary and/or cardiovascular rehabilitation according to the physical ability of each patient and their particular psycho - economic-social needs.</li> <li>6) Develops skills and advanced practice to promote effective service delivery in organized pulmonary and/or cardiovascular rehabilitation programs based on evidence-based new knowledge.</li> </ol>	
<b>General &amp; Special Skills</b>	
<p>The course aims to develop the following <b>general</b> skills:</p> <ul style="list-style-type: none"> <li>• Search, analyze and synthesize data and information related to the individual's pathology</li> </ul>	<p>The course aims to develop the following <b>specific</b> skills:</p> <ul style="list-style-type: none"> <li>• Ability to criticize the content of knowledge</li> <li>• Ability to apply scientific knowledge and research in clinical practice</li> </ul>

- Decision making
- Autonomous work
- Teamwork
- Generating new research ideas
- Exercise criticism and self-criticism
- Promotion of free, creative and inductive thinking
- Communication skills with rehabilitation interdisciplinary team members and patient communication skills

### 3. COURSE CONTENT

1. Physiology and Pathophysiology of Respiration. Assessment of respiratory function. Respiratory indices.
2. Acid-base balance. Respiratory failure. Pulmonary hypertrophy. Respiratory patterns
3. Pathophysiology of respiratory and skeletal muscle damage in chronic pulmonary and cardiovascular diseases. Examination of the maximum capacity for exercise (ergospirometry). Submaximal evaluation tests in chronic lung diseases (flow and functional tests). Diagnostic properties of maximal and submaximal tests in pulmonary limitations.
4. Cardiovascular Physiology. Assessment of cardiovascular function. Diseases of the cardiovascular system. Introduction to Cardiovascular Rehabilitation.
5. Primary prevention of cardiovascular diseases. CHD risk factors. Predictive classification. Assessment of biomarkers in coronary heart disease prevention and cardiovascular rehabilitation.
6. Submaximal assessment tests in chronic cardiovascular diseases. Diagnostic properties of maximal and submaximal tests in patients with heart failure, hypertension, diabetes mellitus
7. Structure and Organization of pulmonary rehabilitation programs. Exercise Physiology. Forms of exercise in COPD, interstitial lung diseases, pulmonary hypertension, cystic fibrosis, bronchiectasis, bronchial asthma. Peculiarities in individual lung diseases.
8. Early recovery in the ICU. The role of HNME and respiratory muscle strengthening in early intervention to preserve muscle mass.
9. In-hospital rehabilitation programs during exacerbations. Details and specifics for pulmonary rehabilitation at home.
10. Structure, organization and prescription of personalized cardiovascular rehabilitation programs. Adaptation of exercise programs to special populations of patients with cardiovascular diseases.
11. Practices in cardiovascular rehabilitation IOM.
12. Tele-rehabilitation and remote assessment and counseling and exercise interventions. Applications and peculiarities in tele -rehabilitation. Telematic monitoring of biomarkers and assessment of the daily clinical picture.
13. Pulmonary Exacerbation Self-Management Programs. Self-Management in Diabetes Mellitus

### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%
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<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector , video , and ICT ( eclass , email, MS Teams , google docs ) in teaching and communicating with students	
<b>TEACHING ORGANIZATION</b>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures / Interactive teaching	39
	Independent Study & article analysis	80
	Elaboration of work study	20
	Writing assignments	36
	Total Course (25 workload hours per credit unit)	<b>175</b>
<b>STUDENT EVALUATION</b>	<p>The evaluation of the students is carried out in accordance with the regulation of the P.M.S. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance in the individual work (35%). Written exams include Multiple Choice Tests, and Analytical/Combined Answer Questions.</p> <p>Individual work includes: one (1) individual research proposal paper of approximately 3,500-5,000 words. They are submitted through e-class at a predetermined time to be checked for plagiarism by Turnitin plagiarism software. The work is graded by the head of the course as well as by another teacher of the course. The average of their scores constitutes 35% of the final grade for the course.</p>	

## 5. RECOMMENDED-BIBLIOGRAPHY

<p>- Suggested Bibliography:</p> <ol style="list-style-type: none"> <li>1. J West (2013) <i>Physiology of Respiration</i>. Parisianos Publications , Athens</li> <li>2. Josef Niebauer (2022) <i>Cardiovascular Rehabilitation</i>. Constantaras Publications, Athens</li> <li>3. Larry DJ and Moore GE. <i>ACSM's Exercise in chronic diseases and disabilities</i>. Paschalidis Publications, Athens</li> <li>4. Nanas S. <i>Cardiorespiratory fatigue testing and cardiorespiratory rehabilitation programs</i>. Stamouli Publications, Athens</li> <li>5. <i>American Society for Cardiovascular and Pulmonary Rehabilitation. Guidelines for pulmonary rehabilitation programs</i>. Collective Project. Pedio Publications, Athens</li> <li>6. Donner Claudio, Goldstein Roger. <i>Pulmonary Restoration</i>. Collective Project. Constantaras Publications, Athens</li> <li>7. <i>Global Initiative of Chronic Obstructive Lung Disease (GOLD). Global strategy for the diagnosis, management and prevention of chronic obstructive pulmonary diseases (2022)</i>. Annually Refreshed Version <a href="https://goldcopd.org/">https://goldcopd.org/</a></li> <li>8. AA CVPR (American Association of Cardiovascular and Pulmonary Rehabilitation). <i>Guidelines for Cardiac Rehabilitation Programs (2022)</i>. Ekdoseis Broken Hil .</li> </ol> <p>- Related scientific journals:</p> <ol style="list-style-type: none"> <li>1. <i>European Respiratory Journal</i> <a href="https://erj.ersjournals.com/">https://erj.ersjournals.com/</a></li> <li>2. <i>European Respiratory Reviews</i> <a href="https://erj.ersjournals.com/">https://erj.ersjournals.com/</a></li> <li>3. <i>COPD: Journal of Chronic Obstructive Pulmonary Disease</i> <a href="https://www.tandfonline.com/toc/icop20/current">https://www.tandfonline.com/toc/icop20/current</a></li> <li>4. <i>Respiratory Care</i> <a href="https://rc.rcjournal.com/">https://rc.rcjournal.com/</a></li> <li>5. <i>J journal of cardiopulmonary rehabilitation and prevention</i> <a href="https://journals.lww.com/jcrjournal/pages/currenttoc.aspx">https://journals.lww.com/jcrjournal/pages/currenttoc.aspx</a></li> </ol>
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6. *European Journal of Preventive Cardiology* <https://academic.oup.com/eurjpc>
7. *Heart* <https://heart.bmj.com/>
8. *Heart & Lung* <https://www.heartandlung.org/>
9. *Hellenic Journal of Cardiology* <https://www.hellenicjcardiol.com/>

**COURSE OUTLINE**  
**SPECIAL CLINICAL ISSUES (MP24)**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MP24	<b>SEMESTER OF STUDY</b>	B
<b>COURSE TITLE</b>	Special Clinical Issues		
<b>SELF-ENDED TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	<b>2+1</b>	<b>7</b>	
<i>Laboratory</i>			
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek English		
<b>ERASMUS STUDENTS</b>	NO		
<b>ECLASS COURSE CODE</b>	<a href="#">PHYSIO_P_107</a>		
<b>COURSE RESPONSIBLE</b>	Dr Savvas Spanos, Assistant Professor		
<b>PHONE/ EMAIL</b>	2231060298/ <a href="mailto:sspanos@uth.gr">sspanos@uth.gr</a>		

**2. LEARNING OUTCOMES**

<b>Learning results</b>
<p><b>Upon successful completion of the course, the student will be able to:</b></p> <ol style="list-style-type: none"> <li>1) Demonstrate knowledge and understanding that builds on but also extends/reinforces knowledge associated with previous coursework and provides a basis or opportunity for original development and/or application of ideas, within a framework of theory, research and applied practice.</li> <li>2) To apply the knowledge from his previous course of study to solve problems in new or less familiar environments in the context of the wider (or interdisciplinary) working conditions related to his field of study, confirming his understanding of them, as well as the ability to use them .</li> <li>3) To have the ability to integrate knowledge, manage complex issues and formulate decisions using incomplete or limited information, while at the same time supporting reflection on the social and ethical responsibilities associated with the application of knowledge and decisions.</li> <li>4) Be able to communicate his conclusions, as well as the knowledge and logic on which they are based, to specialized and non-specialized audiences with clarity and competence.</li> <li>5) To choose a model of approach to his professional development and to avoid possible obstacles in its implementation.</li> <li>6) To qualitatively assess the existing research evidence and manage the patient based on it.</li> <li>7) To make use of his daily experiences in a systematic way for the benefit of the therapeutic effect.</li> </ol>

- 8) To solve clinical problems under structured clinical reasoning, to make the best treatment decision every time and to be able to support its effectiveness in relation to its cost.
- 9) To improve his clinical workplace as well as his techniques always respecting the rules of ethics in the provision of health services.
- 10) To act proactively for the benefit of his patients.

#### General & Special Skills

The course aims to develop the following **general** skills:

- Search, analysis and synthesis of data and information, using the necessary technologies.
- Adaptation to new situations.
- Decision making.
- Autonomous work.
- Teamwork.
- Work in an interdisciplinary environment.
- Generating new research ideas.
- Exercise criticism and self-criticism.
- Promotion of free, creative and inductive thinking.

The course aims to develop the following **specific** skills:

- Ability to apply its scientific knowledge in clinical practice.
- Ability to develop clinical reasoning and make therapeutic decisions.
- Ability to systematically utilize daily experiences and apply research procedures in daily practice.
- Ability to communicate with the patient.

### 3. COURSE CONTENT

1. Continuous professional development. Thoughtful practice. Experiential learning and strategies.
2. Clinical reasoning: necessity and basic principles.
3. Scientific argument: logical fallacies and biases.
4. Pain: neurophysiology and chronicity.
5. Chronic pain of central sensitization.
6. Subjective assessment in neuromusculoskeletal physical therapy.
7. Advisory work guidance.
8. Neuro-otological issues and physical therapy approach.
9. Professional burnout.
10. Ergonomics in physical therapy.
11. New technologies in rehabilitation.
12. Physiotherapy in gynecology.
13. Case studies that enhance learning (case studies).

### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Face-to-face, Hybrid education, Distance education at 20%
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector, video, and ICT (e-class, email, MS Teams, google docs) in teaching and communicating with students

TEACHING ORGANIZATION	Activity	Semester Workload
	Choose	39
	Independent Study & article analysis	80
	Elaboration of work study	25
	Writing a paper	26
	Preparation for presentation and public presentation of work	5
	<b>Total Course (25 workload hours per credit unit)</b>	<b>175</b>
STUDENT EVALUATION	<p>The evaluation of the students is carried out in accordance with the regulation of the P.M.S. and the relevant decisions of the Department Assembly as a weighting of their grade in the written exams (65%) and their performance at work (35%). Written exams include Multiple Choice Tests.</p> <p>The paper is a clinical individual case study, it is prepared individually (1 paper for each student), it is submitted through the e- class in a predetermined period of time to be checked for plagiarism by Turnitin plagiarism software, and it is also submitted to a public presentation. The work is graded by the course manager based on specific evaluation criteria that are known to the students (notified at the start of the course).</p>	

## 5. RECOMMENDED - BIBLIOGRAPHY

1. Aslop A, 2000. Continuing Professional Development: A guide for therapists. BLACKWELL SCIENCE LTD.
2. Johns C, 2009. Becoming a Reflective Practitioner, 3rd ed. WILEY-BLACKWELL.
3. Higgs J, Jones M, Loftus S, Christensen N, 2008. Clinical Reasoning in the Health Professions, 3rd ed. BUTTERWORTH-HEINEMANN.
4. Herbert R, Jamtvedt G, Mead J, Hagen KB, 2005. Practical Evidence-Based Physiotherapy, 1st ed. BUTTERWORTH-HEINEMANN.
5. Bury T, Mead J, 1998. Evidence-based healthcare, 1st ed. BUTTERWORTH-HEINEMANN.
6. Jones M, Rivett D, 2004. Clinical reasoning for manual therapists, 1st ed. BUTTERWORTH-HEINEMANN.
7. Kassirer J, Wong J, Kopelman R, 2009. Learning Clinical Reasoning, 2nd ed. WILLIAMS & WILKINS.
8. Ghaye T, Lillyman S, 2011. Empowerment Through Reflection: A practical guide for practitioners and health care teams, 2nd ed. MARK ALLEN PUBLISHING Ltd.
9. Wittink H, Michel TH, 1997. Chronic pain management for physical therapists, 1st ed. BUTTERWORTH-HEINEMANN.
10. Grieve G, 1994. The masqueraders. In: Boyling JD, Palastanga N. Grieve's modern manual therapy: the vertebral column, 2nd ed. CHURCHILL LIVINGSTONE.

**COURSE OUTLINE  
MSC DESSERTATION**

**1. GENERAL**

<b>SCHOOL</b>	School of Health Sciences		
<b>DEPARTMENT</b>	Physiotherapy		
<b>LEVEL OF EDUCATION</b>	Postgraduate		
<b>LESSON CODE</b>	MPDE	<b>SEMESTER OF STUDY</b>	C
<b>COURSE TITLE</b>	MSC DISSERTATION		
<b>SELF-ENDED TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDIT UNITS</b>	
<i>Theory + Exercise tutorials</i>	-	<b>30</b>	
<i>Laboratory</i>	-		
<b>COURSE TYPE</b>	Special Background		
<b>PREREQUISITE COURSES:</b>	All the courses of the program		
<b>C LANGUAGE OF TEACHING AND EXAMINATIONS :</b>	Greek English		
<b>ERASMUS STUDENTS</b>	YES		
<b>ECLASS COURSE CODE</b>			
<b>COURSE RESPONSIBLE</b>	<a href="#">Program Coordinating Committee - Supervising Professor</a>		
<b>PHONE/ EMAIL</b>			

**2. LEARNING OUTCOMES**

<b>Learning results</b>	
<b>Upon successful completion of the course, the student will be able to:</b>	
To apply scientific research on cutting-edge and clinical utility issues, relevant to the wider field of Physiotherapy, which research should contain elements of originality, either through the effort to produce new knowledge, or through the development of critical thinking, or through a combination of the above two.	
<b>General &amp; Special Skills</b>	
<p>The course aims to develop the following <b>general</b> skills:</p> <ul style="list-style-type: none"> <li>• Production of new knowledge.</li> <li>• Critical thinking.</li> <li>• Research gap identification.</li> <li>• Conception of original ideas for the preparation of scientific research.</li> <li>• Investigating scientific fields with clinical applicability.</li> </ul>	<p>The course aims to develop the following <b>specific</b> skills:</p> <ul style="list-style-type: none"> <li>• Overview and critical analysis of existing knowledge in the fields of prevention, improvement and rehabilitation.</li> <li>• Applications of new clinical methods and techniques to existing theoretical models with the aim of improving health care.</li> <li>• Development of new clinical methods and techniques.</li> <li>• Development of scientific text writing skills, oral support to an audience.</li> <li>• Critical treatment of theoretical models as well as methodologies, techniques or tools for approaching research fields in the field of Physiotherapy.</li> <li>• Proposal to create new theories - innovations - models as well as clinical</li> </ul>



methodologies, techniques or tools to approach research fields, in the field of Physiotherapy.

### 3. COURSE CONTENT

14. Review of the article.
15. Identifying a research gap.
16. Conceptualizing an original research idea.
17. Determination of research purpose and research hypotheses.
18. Research protocol design.
19. Determination of preparation schedule.
20. Calculating costs and predicting potential constraints.
21. Drafting of a request for elaboration to the Ethics and Ethics Committee.
22. Application of pilot measurements.
23. Sample collection.
24. Elaboration of main measurements.
25. Data collection as a result of the main measurements.
26. Statistical analysis of the data and extraction of results.
27. Interpretation of the results and their comparison with the results of related research.
28. Drawing conclusions about clinical significance.
29. Writing the paper.
30. Public support of work.

### 4. TEACHING AND LEARNING METHODS - ASSESSMENT

<b>METHOD OF TEACHING</b>	Exclusive collaboration of the supervisor and the director of the research laboratory under which the study is being prepared, with the student/researcher (supervised study).	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES</b>	Use of PC, projector, video, and ICT (e - class, email, MS Teams, google docs) in communication with the student/researcher. Use of the necessary research equipment to carry out the measurements and collect the data.	
<b>ORGANIZATION OF SUPERVISED STUDY</b>	<b>Activity</b>	<b>Semester Workload</b>
	Independent Study & article analysis	250
	Elaboration of a study	200
	Writing a paper	200
	Preparation for presentation and public support of the work	100
	<b>Total Course</b>	<b>750</b>
<b>STUDENT EVALUATION</b>	The evaluation of the students is carried out by a three-member evaluation committee (supervisor, internal evaluator, external evaluator) in accordance with the regulation of the MSc and the relevant decisions of the Assembly of the Department.	

## 5. RECOMMENDED -BIBLIOGRAPHY

18. Hicks C. *Research Methods for Clinical Therapists, 4th edition, Churchill Livingstone Publications, 2004*
19. Sim J. and Wright C. *Research in Health Care, Stanley Thorne Publications, 2000*
20. Polgar S. and Thomas SA *Introduction to Research in the Health Sciences, 5th edition, Churchill Livingstone Publications, 2008*
21. Thomas , J. , Nelson , J. \_ \_ *Research Methods in Physical Activity, Paschalidis Publications, 2003*
22. Zafeiropoulos K. *How is a scientific paper done? Scientific research and writing papers, Kritiki Publications, 2005*
23. Kampitsis X. *The Research in Sports Sciences, Tsartsiani Publications, Thessaloniki, 2004.*
24. Bowers , D. \_ *Fundamental concepts in biostatistics, P. X. Paschalidis Medical Publications, 2011*
25. Pagano M. and Gauvreau K. *Principles of biostatistics, Hellenic Publications, 2002*
26. Trichopoulos D., Tzonou A. and Katsougianni K. *Biostatistics. Parisianos Publications, 2000*
27. Kirkwood B. and Sterne J. *Essentials of Medical Statistics. Blackwell Science, 2003*
28. Field A. *Discovering Statistics using IBM SPSS Statistics, 4th edition, Sage Publication, 2013.*