



UNIVERSITY *of* NICOSIA

**Response to the External Evaluation Report**

**Program of Study:**

**Master of Science in Physiotherapy and Rehabilitation**

- Musculoskeletal Physiotherapy Direction**
- Neurological Physiotherapy Direction**

**June 2018**

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## **Response on the External Evaluation Committee's Report**

### **Programme of Study: Master of Science in Physiotherapy and Rehabilitation**

#### **-Musculoskeletal Physiotherapy Direction**

#### **-Neurological Physiotherapy Direction**

### **I. Introduction**

We are very grateful to the Chairman, Prof Eliezer Carmeli and the members of the External Evaluation Committee (EEC) Prof. Jennifer Freeman, Prof. Shea Palmer and the student Ms. Amalia Evangelou for their professional approach and thoroughness during the external evaluation visit to University of Nicosia on May 3, 2018, as well their detailed evaluation report.

We especially thank the EEC for the high average grade of more than 4.5 out of 5.0 they assigned to our Master Program. Their suggestions indeed add value to our programme, not surprisingly, taking into consideration the EEC's members' expertise in the subject and their significant academic experience. The questions and suggestions they raised have already proven helpful to us, and the team's insights will continue to guide our ongoing efforts to improve the structure and content of the programme.

The Program Coordinators and the faculty members of the Department of Life and Health Sciences of the University of Nicosia involved in developing and implementing the Masters of Science in Physiotherapy and Rehabilitation, have thoroughly considered the EEC's constructive feedback and have taken immediate action to adopt the EEC's recommendations.

We note the unanimous recommendation of the EEC Committee for accreditation of the MSc Programme.

Our response is structured as follows:

- Section II briefly lists the EEC's positive feedback and comments.
- Section III presents all the EEC's recommendations and the responses/actions we have taken; the supporting documents testifying to this are provided in the Appendices at the end of our report.
- Section IV summarizes the response.
- Section V is the appendix (revised course syllabi).

## II. Positive Points of the Programme

We note the unanimous recommendation of the EEC Committee for the accreditation of the MSc Programme. (see p. 17 of the report). Here we highlight below some of the EEC's positive comments regarding the Programme, as found in the EEC's Report.

- a. **The Internal Evaluation procedure:** *"The EEC received an electronic copy of the application in advance. The application was generally very well completed."* (see p. 5 of the report)
- b. **Organization of teaching work:** *"The programme information will be made available online. The teaching team reported that students on comparable programmes receive a detailed outline at the beginning of each course, including full schedule and details of assessment, at the beginning of the course. The student on the panel reported that this process was easily accessible and transparent."* And *"This flexibility (to extend the timeline of the program for the research thesis) might be very useful where there are additional time demands in terms of securing ethical approval and to facilitate the complexities of collecting clinical data over extended periods of treatment or clinical observations."* (see p. 6 of report)
- c. **Teaching:** *"The technologies were modern and well-maintained and provide excellent resources to support teaching and research activities."* Also, *"A learner-centred model is utilised, along with diverse teaching methods to engage students at masters level study... The students have the opportunity to gain immediate feedback from faculty in terms of these evaluations (on their own complex case scenarios), which the EEC felt was a positive feature in providing additional opportunities for student learning"* (see p. 7 of report)
- d. **Teaching personnel:** *"The teaching team has excellent expertise and qualifications appropriate to delivery of the proposed programme. All faculty listed in the application have doctoral qualifications across a range of specialisms relevant to the programme... Certificate in Education, ... academic experience overseas,... maintain an active clinical caseload,... are active researchers, are involved in writing grant applications, attending and presenting at conferences, publishing their outputs in international peer-reviewed journals and supervising post-graduate research students "* And *" It was clearly apparent that they were hard working and dedicated to supporting their students."* (see p. 7-8 of report)
- e. **Purpose and Objectives and learning outcomes of the Program of Study:** *"All course content is consistent with the mission of the programme to prepare students to be scientifically and professionally qualified as advanced and specialised practitioners in the domains of Musculoskeletal Physiotherapy and Neurological Physiotherapy."* (see p. 9 of report)
- f. **Structure and Content of the Program of studies:** *"It is apparent to the EEC that the*

*structure of the programme has been carefully considered with core (compulsory) Biostatistics and Research methodology courses in the first semester which introduce principles and fundamental knowledge required for later progression.” (see p. 9 of report)*

- g. **Quality Assurance of the Program of Study:** *“It was apparent from the presentations by the panel members that quality assurance is taken very seriously by the University and that a variety of mechanisms are in place to support this.” And “the EEC was very satisfied that the regulation of QA was appropriate and was informed by a wide range of sources and perspectives (see p. 10-11 of report)*
- h. **Management of the Program of Study:** *“The management of the programme, as presented by the programme co-ordinators was robust, and they had a shared vision and were clearly passionate about the development of this programme.” And “this is further evidence of a collaborative and supportive programme team” (see p. 11 of report)*
- i. **International Dimension of the Program of Study:** *“The presentation by the Rector strongly emphasised the international dimension of the University as a whole.” And “the courses on the programme will be taught in a mixture of English and Greek which enhances its international dimension” (see p. 11 of report).*
- j. **Connection with the labor market and the society:** *“This MSc programme will be the first to provide options for directions in both musculoskeletal and neurological specialisms”. And “there is no current provision for postgraduate study in the area of neurological rehabilitation, thereby identifying a gap in the market” (see p. 12 of report)*
- k. **Research Teaching Synergies:** *Most staff are research active to some level, as evidenced by them applying for and attracting research funds (e.g. grants associated with basketball injury prevention, support for athletes at the end of their athletic careers, and prevention of osteoarthritis), publishing their work in international peer-reviewed journals, attending and presenting at scientific conferences, and supervising post-graduate research students.” “The students would benefit from active involvement in research projects that were aligned in this way. The EEC considered this student-centred approach to be a very positive aspect of the programme”. (see p. 13 of report)*
- l. **Administrative Mechanisms:** *“The EEC was reassured that Student Welfare Support was in place.” (see p. 14 of report)*
- m. **Infrastructures/Support:** *“On our tour of the physiotherapy satellite campus we were shown modern computer suites that are fully accessible to students on site. A VPN (Moodle) is available to support all courses.” (see p. 14 of report)*

- n. **Financial Resources:** *There seems to be adequate financial resources to support the research and teaching activities of the programme.” (see p. 14 of report)*

The above mentioned comments are consistently supported by numeric scores (mainly 5 out of 5) in the Quality Indicator Sections at the end of the EEC’s report. Therefore, the positive qualitative and quantitative evaluations indicate a definite recommendation for accreditation. The recommendations of the ECC were considered in-depth and adopted. The actions taken are detailed below.

### III. Response to the External Evaluation Committee’s Recommendations

We provide below the list of the recommendations and the action taken to adopt them. The supporting documents, testifying to the action taken, are provided in the Appendices section at the end of this report.

- 1) Recommendation:** (p. 17) *The programme and individual course learning outcomes should continue to be revised to better reflect Masters level (for example greater emphasis on critical analysis, synthesis, discussion and debate).*

**Our response:** The Master of Science in Physiotherapy and Rehabilitation Programme is committed to ensure its academic quality. A continuous assessment of the curriculum and learning outcomes of the courses will be made to ensure the Masters level of study. In particular, all course syllabi were revised to clearly state the advanced content and critical level of thinking required at Master level of study that will be delivered. The revised course syllabi can be found in APENDIX I.

- 2) Recommendation:** (p. 17) *The learning outcomes of the MSc programme and individual courses should more explicitly link research and clinical practice and, where possible, be aligned with the staff’s areas of research and expertise.*

**Our response:** The Master of Science in Physiotherapy and Rehabilitation Programme is designed to connect clinical practice with research. We are aiming in the development of a research centre for investigating the main gaps in the musculoskeletal and neurological literature. All of the teaching personnel is active in research. In addition, the facilities of the Program are appropriately equipped with resources to facilitate research. The Cyprus National Bioethics Committee is supportive to research and a few members of the University faculty are members of the committee. The students are also encouraged to participate to faculty research projects even from their undergraduate studies. Thus, the

ambition to promote research is being built methodically and gradually from the undergraduate level.

The link between research and clinical practice is present from the 1<sup>st</sup> semester of the program with the courses in Biostatistics and Research Methods, clearly demonstrating that we recognize the importance of research in combination with clinical excellence. This is now more explicitly stated in the learning outcomes of all courses where students are encouraged to scientifically support the clinical applications with updated literature evidence (APPENDIX I).

Additionally, more emphasis is now given on integrating the research interests and activity of academic staff with the course content. Thus, the content of specific courses such as the MPTY-524, MPTY-525 Neurological Rehabilitation I and II, do now explicitly link clinical practice with research, and students participate in ongoing research projects of the teaching faculty.

**3) Recommendation:** (p. 17) *The title of the programme should reflect the specific direction of study (for example ‘MSc in Rehabilitation (Musculoskeletal)’ or ‘MSc in Rehabilitation (Neurological)’.*

**Our response:** The Master of Science in Physiotherapy and Rehabilitation Programme is designed to connect the clinical background in physiotherapy practice with research. The major aim of the program is to prepare students to be scientifically and professionally qualified as advanced and specialized practitioners in the domains of Musculoskeletal and Neurological Physiotherapy. Eligible applicants should have a clinical background in musculoskeletal and neurological principles of rehabilitation and know the physiological as well as the pathological elements of the conditions. They should be qualified to handle patients and organize rehabilitation programs specific to every patient and in a structured way. According to these requirements the name of the Master should reflect the background of the eligible applicants.

The EEC’s recommendation, as this is presented in page 17 as well as in the main content of the report (see p. 9), to “remove ‘Physiotherapy’ from the title of the Master”, could very well fit with the intention to recruit other health professionals as chiropractors and osteopaths. However, caution should be given to the prospective students, who come from a non-clinical/health profession. As such, we agree with the recommendation by the EEC to remove the word “Physiotherapy” from the title of the Master but, we would change the title of the program to “Master of Science in Clinical Rehabilitation – Musculoskeletal, and Master of Science in Clinical Rehabilitation - Neurological”, to reflect the characteristics of the academic program, and thus excluding professionals without clinical background.

- 4) Recommendation:** (p. 17-18) *The advertised student qualifications for entry are appropriate, but the EEC would recommend that the programme could potentially be widened to include relevant health professionals with a Bachelor Degree such as occupational therapists or sports therapists*

**Our response:** As discussed in the previous recommendation this program has been designed to enhance and promote a deep understanding, clinical reasoning and advanced clinical and research skills in the domains of musculoskeletal and neurological rehabilitation. It is therefore a prerequisite that the potential applicants have a first degree with a clinical background. Thus, the program could be opened to other professional such as occupational therapists (Neurological direction), Osteopaths/Chiropractors (Musculoskeletal direction) who are able to recognize, and deal with clinical applications and advanced rehabilitation techniques.

- 5) Recommendation:** (p. 18) *A clear process should be developed to facilitate students in making the right choice of direction (Musculoskeletal or Neurological).*

**Our response:** Most of the prospective students of this Master programme are qualified physiotherapists already working with patients of one or the other direction. Most of them are expected to have already self-selected themselves in one of the offered directions based on the volume of their patients and the problems they feel they need to improve.

Nevertheless, the programme facilitates decision making by organising in the beginning of the 1<sup>st</sup> semester the “Masters’ Debate Seminars”. By participating at seminars, webex sessions, and social events with experts in the field of musculoskeletal and neurological rehabilitation, students will have the opportunity to meet experts in the field of their interest, critically think other aspects of rehabilitation and finally choose the specialty that is most suitable to them.

University’s policy allows students to attend classes for two weeks in the beginning of each semester and drop/change courses if they feel they didn’t make the right choice without any additional cost.

Additionally, by having the opportunity, through the courses of the first semester, to participate in research projects in the field of their interest, they could strengthen the decision they made towards the particular direction.

Finally, tutors, program coordinators and faculty members of the program will be always available for advising students about their selection and discuss at regular basis any doubts about their progress.

- 6) Recommendation:** (p. 18) *A seminar programme with contributions from experts, well respected, external speakers should be considered to help development of the student’s higher level of critical thinking; the attractiveness of the programme to new recruits; and raise the profile and reputation of the Department*



**Our response:** A one day seminar or an open day event, organized at the beginning of the semester with experts in the both fields of musculoskeletal and neurological specialty could not only facilitate the critical thinking of students and promote the advanced level of the master program, but could also enhance the international dimension of the program. Such activities could build networks and collaborations for funded research projects and could built International institutional collaborations.

We strongly agree with this recommendation of the EEC and we will implement such an event at the beginning of every cohort. Moreover, at the end of every cohort a short half a day/one day event of the final projects/thesis of the Master students will be held with open invitation to all members of the Life and Health Sciences Department of the University, the members of the Cyprus Physiotherapy Association and the members of the Cyprus Medical Association.

#### IV. Conclusion

We would like to thank again the External Evaluation Committee for their professional and academic approach during the on-site evaluation of the programme and for their valuable comments and suggestions. The EEC comments fit very well with our vision to enhance the critical thinking of the students, and towards our commitment for research standards in higher education at the University of Nicosia. As shown in our response we have taken immediate action to adopt these recommendations and further improve our programme. We were delighted to meet and discuss the opportunities of our program with experts with such specialised knowledge and experience in the fields of interest. We are committed to continue our hard work in order to inspire our students and provide opportunities for students' learning experience.

On behalf of the Master of Science in Clinical Rehabilitation (Musculoskeletal or Neurological) Programme,

The coordinators

Sofia Lampropoulou, PT, MSc, PhD  
Acting Coordinator  
Assistant Professor  
University of Nicosia

Manos Stefanakis, PT, MSc, PhD  
Program Coordinator  
Assistant Professor  
University of Nicosia

# **APPENDIX I**

## **Revised Syllabi**

## Course Syllabus MPTY-501 Advanced Biostatistics

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-501	Advanced Biostatistics	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	1 <sup>st</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Markianos Kokkinos	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Critically revise the meanings of the population and of the design of sampling research.
- Critically evaluate the Sampling methods and identify them at various research articles.
- Recognize and critically discuss the measurements and descriptive statistics.
- Understanding primary theory of probabilities and distributions.
- In-depth discussion of parameter estimation and case control.
- Hypothesis tests for the average population value.
- Control of hypotheses of average values of two populations.
- Deepen in the Variance Analysis.
- Understand the use of non-parametric statistics
- Analyse the Statistical Methods - Quality Control.
- Expand the knowledge about Regression Analysis

## Learning Outcomes:

After completion of the course students are expected to be able to:

1. Evaluate the basic stages of sampling research.
2. Critically evaluate the basic concepts of descriptive and inferential statistics in clinical rehabilitation.
3. Choose and apply the appropriate statistical test to clinical question under investigation.
4. Interpret the results of an investigation.
5. Understand the information in the statistical tables and charts, as well as the ways to transfer the statistical data in the form of statistical tables and diagrams.
6. Extract important information about statistical data and present them in the form of central tendency measures and measures of dispersion.
7. Debate about the importance and use of significant distributions.
8. Be aware and explain the basic principles of probability.
9. Be able to use regression models.
10. Understand tables of quality data and apply quality controls.
11. Critically discuss on when and how to use non-parametric tests.
12. Use the SPSS statistical packet for statistical analysis of research data.

## Course Content:

1. Planning a sampling research.
2. Critically evaluate the sampling methods.
3. Descriptive Statistics: variables distinction, frequency distribution, graphs, dispersion and central tendency measures, transformation, normal values, coefficient of variation, standard error
4. Organizing a quantitative data analysis: possible mean standard error, t-test, reliability limits and confidence interval, one-tail hypothesis, the concept of null hypothesis. Type I and II errors, sample size and power analysis, repeated measures analysis, analysis of variance.
5. Examples of Analysis on real quantitative data collected during the practical sessions
6. Organizing a quality analysis: Binary classification of qualitative observations. -test. Assessment of the degree of correlation between qualitative characteristics. Relative risk and reliability limits. Reliability limits and confidence interval in percentages. Basic probability rules.
7. Link between quantitative characteristics: The concept of statistical correlation and dependence (regression). Pearson Correlation Factor and Concept of Determination Factor. Application conditions and interpretation of the model of multiple linear dependence.
8. Non-parametric tests: Advantages and disadvantages.

## Learning Activities and Teaching Methods:

Lectures, Electronic material, Practical

**Assessment Methods:**

Midterm Exam, Practical and Final Exam
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**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Applied Statistics in Health Sciences (Greek Textbook)	Mpersimis S., Sachlas A.	Tziola	2016	978-960-418-660-0
Medical Statistics from Scratch: An Introduction for Health Professionals (Greek version)	Bowers D.	Paschalidis	2011	978-960-489-033-0
Biostatistics (Greek Textbook)	Nikiforidis G.	Litsas	2009	978-960-372-126-0

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Biostatistics (Greek Textbook)	Stavrinos BG., Panagiotakos DB.	Gutenberg	2007	978-960-01-1121-7
Biostatistics (Greek Textbook)	Trichopoulos D., Tzonou A., Katsougianni K.	Parisianou	2002	978-60-394-108-8
Principles of Biostatistics (Greek version)	Pagano M. Gauvreau K.	HELLIN	2005	960-286-685-3
Modern Statistical Analysis (Greek version)	Kintis A.	Gutenberg	2002	960-01-0585-5
Descriptive Statistical Analysis (Greek Textbook)	Apostolopoulos Th.	Sygchroni Ekdotiki	2003	960-8165-39-3

Statistics, Probabilities ( <i>Greek Textbook</i> )	Kikilias P., Palamourdas D., Petrakis A., Tsoukalas D.	Deiros	2001	960-8271-07-X
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## Course Syllabus MPTY-502 Research Methodology in Health Sciences

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-502	Research Methodology in Health Sciences	2
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	1 <sup>st</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Markianos Kokkinos	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- enhance students' understanding of the value of the evidence-based research methodology in neuro-musculoskeletal rehabilitation.
- provide students with the appropriate skills to actively participate in the process of scientific research in the field of clinical rehabilitation.
- analyze in detail the questions that concern modern research and its current trends in the field of musculoskeletal and neurological rehabilitation.
- cultivate the scientific and critical thinking of the students and
- develop the necessary research culture while understanding the rules of bioethics and ethics

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Give a thorough knowledge of research designs, data collection, and analysis of quantitative and qualitative research in the field of neuro-musculoskeletal rehabilitation.
2. Recognize the value of research methodology in the implementation of the documented clinical practice
3. Analyze the steps of the research process in quantitative and qualitative research in the fields of musculoskeletal and neurological rehabilitation
4. Describe and apply ethical and ethical rules in conducting clinical research
5. Choose the right research plan for each type of research question as this is identified through a critical review of the literature
6. Select and justify the appropriateness of the sampling methods and measurement tools

- for data collection
7. Understand and apply appropriate data analysis techniques in quantitative and qualitative research
  8. Interpret the results of an investigation and integrate them for presentation
  9. Demonstrate the ability to critically read research articles and systematic reviews
  10. Plan, write, and implement a research proposal based on research questions identified through the gaps in the musculoskeletal and neurological fields of literature.

### **Course Content:**

1. Discussion on concepts and forms of qualitative - quantitative research in musculoskeletal and neurological rehabilitation:
2. Critically evaluate the requirements for ethical musculoskeletal and neurological clinical practice
3. Clarification of research questions and problems. Purpose of research, hypothesis and identification of variables in neuro-musculoskeletal rehabilitation.
4. Review and critically evaluate evidence based literature in the field of neurological and musculoskeletal rehabilitation. Search bibliography from electronic and printed media. Search sources, and select ways to search for information
5. Debate between qualitative and quantitative research designs: presentation samples of qualitative and quantitative research designs in the field of clinical rehabilitation of neurological and musculoskeletal practice.
6. Methods and principles of sampling: access to the population and sample selection, sample inclusion and exclusion criteria
7. Discussion on methods of data collection in qualitative and quantitative research, scientific tools, questionnaires: principles of reliability and validity, measurement errors
8. Data encoding, introduction to the computer. Statistical programs (Excel, SPSS). Data analysis, descriptive and inductive statistics. Analysis of data in qualitative surveys.
9. Interpretation and presentation of results in quantitative and qualitative research. Article writing - poster - powerpoint
10. Design and writing of a research proposal (protocol).
11. Systematically and critically review databases using specific search terms and criteria relevant to research questions given in the class. Methodology of Systematic Review - Post-Analysis.

### **Learning Activities and Teaching Methods:**

Lectures, Personal study through written assignments. Course work on identifying research questions in the field of musculoskeletal and neurological rehabilitation, designing research protocols, and critically analysing a research article.



**Assessment Methods:**

Coursework, assignment and final exam.
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**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Research Methods and Data Analysis for Health Sciences (Greek Textbook)	Panagiotakos DB.	DIONIKOS	2011	9789606619649
Research Methodology. Application to Health Sciences (Greek Textbook)	Sachini-Kardasi A.	BHTA	2007	9789607308801
Research Methods for Clinical Therapists	Hicks, C	Churchill Livingstone	2009	9780702029981

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Statistics and Research Methods in Social Sciences (Greek Textbook)	Anastasiadou DS.	KPITIKH	2012	9789602187784
Research in Sports Sciences	Kampitsis Ch.	Tsartsanis	2004	960-8237-27-0

## Course Syllabus MPTY-513 Connective Tissue Biology

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-513	Connective Tissue Biology	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life & Health Sciences	1 <sup>st</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory	Physiotherapy and Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr Kyriakos Felekkis	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Understand and explain how the particular anatomy and physiology of the bone, cartilage, and other connective tissues affects their response to mechanical loading.
- Compare the variable biological impact of mechanical load on connective tissues and utilize this responses on cases with neuro-musculoskeletal pathologies.
- Associate the development of pathological musculoskeletal and neurological conditions with connective tissue biology and interpret their clinical findings according to the latest research evidence of the fields of Mechanobiology and clinical sciences.
- Discriminate the changes in connective tissue due to adaptation to mechanical load, due to aging, due to degeneration or overload injury and defend your decision based on the relevant literature.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Describe and critically synthesize the relevant literature on the anatomy and physiology of the bone and how it is affected by mechanical load.

2. Explain the anatomy and physiology of cartilage and fibrocartilaginous structures (meniscus, intervertebral disc, etc.) and discuss how it is implicated in mechanical musculoskeletal and neurological pathologies
3. Describe the anatomy and physiology of tendons and ligaments and differentiate the clinical symptoms stemming from their degeneration or mechanical loading according to the latest evidence based literature
4. Develop a critical awareness of literature about the metabolism of calcium and vitamin D, and critically connect their deficit to clinical cases.
5. Critically analyze osteoarthritis, rheumatoid arthritis, osteoporosis, osteomalacia, rachitis at the molecular level and review the research data on their management with mechanical loading.
6. Critically apply the principles of mechanical load adaptation in the prevention and treatment of ligaments, muscles and tendons
7. Evaluate the biological impact of mechanical load on connective tissues and find new supporting research evidence for their exercise interventions.
8. Critically analyze the effect of age (aging), degeneration and injury on the adaptation of connective tissues to mechanical loads and modify/select their mechanical treatment parameters accordingly
9. To critically analyze the scientific knowledge and interpret the existing research on soft tissue biology

#### **Course Content:**

1. Role, function and types of connective tissue.
2. Review and analysis of anatomy, physiology and mechanobiology of bone tissue and bone
3. Evaluation of the anatomical and mechanobiological characteristics of the tendons
4. Explanation of the anatomical, physiological and mechanobiological fundamentals of the ligaments
5. Description and assessment of the anatomical and biological characteristics of the meniscus
6. Anatomy, physiology and mechanobiology of the intervertebral disc
7. Age influence on connective tissues and clinical paradigms
8. Evidence based literature on the effects of degeneration on connective tissues.
9. Effect of structural damage on connective tissues and new data regarding ways of prevention
10. Anatomy and physiology of muscle tissue and its relation to mechanical stresses in the skeletal system

#### **Learning Activities and Teaching Methods:**

Lectures, Discussion, Clinical scenarios, student presentations, journal clubs.

### Assessment Methods:

Interest-participation-attendance, assignment-test, mid-term exam, final examination

### Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Basic Orthopaedic Sciences: The Stanmore Guide.	Ramachandran M.	Hodder Arnold	2006	9780340885024
Basic Orthopaedic Biomechanics and Mechano-Biology, 3 <sup>rd</sup> ed.	Mow VC & Huiskes R	LWW	2005	0781739330

### Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Review Of Orthopaedics	Miller MD	Elsevier	2012	9781455737383
Orthopaedic Textbook of Trauma and Orthopaedics, 2 <sup>nd</sup> ed	Bulstrode C, Macdonald JW, Eastwood DM, Macmaster J.	Oxford	2017	9780198766506
Clinical Sports medicine, 3 <sup>rd</sup> ed.	Bruckner and Khan	Mc Graw Hill Education	2016	9781743761380

## Course Syllabus MPTY-514 Musculoskeletal Rehabilitation I

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-514	Musculoskeletal Rehabilitation I	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	1 <sup>st</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Musculoskeletal Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr Manos Stefanakis Dr Christodoulos Fysentzou Dr Evdokia Billi	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Provide the students with the ability to critically assess and autonomously treat musculoskeletal impairments of the upper quadrant in an advanced level and in accordance to evidence-based practice.
- Present to the students the most up to date scientific knowledge of the pathophysiology and clinical presentation of the most common pathologies of the upper quadrant.
- Enhance students' ability to distinguish the source, the area and the tissue that are responsible for the impairment and critically utilize the concepts of Manual Therapy in order to treat the patient.
- Equip students with the ability to recognize and classify patients in sub-groups based on their clinical presentation and tailor their treatment plan in order to decrease the patients' symptoms and improve their functional status.
- Promote the critical understanding, reasoning and evaluation of new evidence in musculoskeletal rehabilitation
- Inform the clinical musculoskeletal practice with scientific and research evidence

## Learning Outcomes:

After completion of the theory part students are expected to be able to:

1. Present up to date research evidence in regards to the mechanisms of musculoskeletal pathologies of the upper quadrant and their different healing phases.
2. Recognize the symptoms of each area (cervical spine, shoulder etc.) and undertake a systematic clinical evaluation towards that area.
3. Demonstrate advanced skills in collecting subjective information from the patient and documenting it in comprehensive manner.
4. Demonstrate an advanced ability to perform a detailed objective assessment of all the areas of the upper quadrant based on Manual Therapy concepts while justifying their examination in a clinical reasoning framework.
5. Critically evaluate the effects of contributing and aggravating factors in musculoskeletal pathologies of the upper quadrant and find solutions for their treatment including the patient's education.
6. Develop a deep understanding of the value of medical diagnosis and the need for mechanical classification of patients' that are labeled with the same medical diagnosis.
7. Prove an enhanced ability to provide ergonomic advice for any contributing and aggravating factors in line with recent research data.
8. Propose and justify a complete rehabilitation program for the treatment of the patients' symptoms and their functional rehabilitation based on the classification and keeping in mind precautions and contraindications based on their medical diagnosis.
9. Be creative in applying Manual Therapy techniques for the treatment of various musculoskeletal disorders of the upper quadrant following ethical guidelines.
10. Identify in an early stage all the contributing factors for chronic pain and critically adjust the treatment accordingly, tailored to the needs of the patient.
11. Critically assess the available research related to musculoskeletal rehabilitation with the aim to expand their knowledge and to analyze their own actions, through a critical thinking and a comprehensive problem-solving approach.

After completion of the practical part students are expected to be able to:

1. Perform a complete clinical evaluation of musculoskeletal problems of the upper quadrant.
2. Recognize serious pathologies that need referral for medical treatment.
3. Categorize musculoskeletal problems in sub-groups according to their clinical presentation including yellow flags.
4. Identify the contraindications for the use of manual therapy techniques and the precautions that are crucial for their application.
5. Choose evidence-based treatment techniques for the gradual improvement of load tolerance of the upper quadrant tissues.
6. Apply the appropriate manual therapy techniques towards all joints of the upper quadrant in different positions and with the proper ergonomic considerations.
7. Teach the patient self-treatment techniques from various positions as well as exercises for the enhancement of the treatment outcome.
8. Re-assess the effect of the treatment with evidence- based outcome measures and adjust the treatment accordingly.
9. Suggest practical advice for contributing and aggravating factors.

**Course Content:**

1. Advanced and comprehensive assessment and treatment of the cervical spine, shoulder complex, elbow and wrist and hand complex.
2. Special test for differential diagnosis of area of symptoms in the upper quadrant.
3. Special test for identifying tissues in fault in the upper quadrant.
4. Assessment and treatment of the peripheral nerves of the upper quadrant.
5. Manual therapy techniques for the cervical spine, shoulder complex, elbow and wrist and hand complex.
6. Indications, contraindications and limitations for mechanical treatment of the upper quadrant.
7. Classification of musculoskeletal disorders of the upper quadrant and therapeutic algorithms.
8. Mechanical presentation and classification of the most common pathologies of the upper quadrant (discogenic problems, tendinopathies, bursitis, impingement syndrome, dislocations, instability, thoracic outlet syndrome, peripheral neuropathies etc.).

**Learning Activities and Teaching Methods:**

Class lectures, class debates, practical sessions in physio labs, case studies

**Assessment Methods:**

Class participation, mini projects, mid-term exams, final exams.

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Maitland's Vertebral Manipulation, Vol I & II, 8 <sup>th</sup> ed	Hengeveld E & Banks K	Churchill Livingstone	2013	9780702040665
Manual Mobilization of the Joints Vol I (Extremities) & II (Spine), 7 <sup>th</sup> ed.	Kaltenborn F	Orthopedic Physical Therapy Products	2011	9788270540709
A System of Orthopaedic Medicine, 3 <sup>rd</sup> ed	Ombregt L, Bisschop P, ter Veer HJ	Churchill Livingstone	2013	9780702052958

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Scientific foundations and principles of practice in musculoskeletal rehabilitation	Magee, D.J. et al	Saunders	2007	9781416002505
Orthopedic Physical Assessment 6 <sup>th</sup> ed.	Magee, D.J	Saunders	2013	9781455709779
The manual of trigger point and myofascial therapy	Kostopoulos, D. et al.	Slack Inc	2001	9781556425424



## Course Syllabus MPTY-523 Clinical Neurophysiology

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-523	Clinical Neurophysiology	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life & Health Sciences	1st
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Neurological Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Sofia Lampropoulou	1st
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to Face	No	None

### Course Objectives:

The main objectives of the course are to:

- Deepen the understanding of Neurosciences related to neurological rehabilitation
- Analyse in detail the organization and functioning of the nervous system in order to understand in depth the control of voluntary movement, memory, learning and perception
- Analyse cognitive behaviour and the influence of emotions, motivation and mood
- Deepen the understanding of the brain's development and organization based on substantiated evidence in order to recognize dysfunctions either during maturation, or following injuries and degenerative diseases
- Analyse thoroughly questions related to neuroplasticity and the ability of the CNS for reconstruction and adaptation.
- Enhance the critical thinking regarding the mind behaviour and critically evaluate literature in clinical neurophysiology

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Present an advanced ability to recognize basic anatomical structures of the Central Nervous System and critically evaluate their function and the complications following

their impairments

2. Critically evaluate and creatively relate their advanced knowledge about anatomical structures of the Central Nervous System (CNS) and Peripheral Nervous System (PNS) with the way these are connected and interact for the normal function of voluntary movement.
3. Critically discuss and debate about the transfer of stimuli through synapses and develop a comprehensive understanding of the synapses dysfunction in clinical practice
4. Critically reflect on new evidence about the organization of neural pathways and the normal function of voluntary movement with the aim to justify and explain the deviations from the normal function
5. Develop an advanced understanding about the higher control from cortical and subcortical neurological structures and discuss new literature about this control in healthy conditions and diseases
6. Critically evaluate the underlying mechanisms of memory and learning and discuss their applications to clinical paradigms.
7. Critically relate the changes that take place in the developing brain with abnormal function in mature neurological patient and critically analyze the brain influence to human behavior
8. Critically explain the inheritance of genetic characteristics and discuss case studies scenarios of patients with inheritance diseases
9. Develop an deep understanding about the plastic changes of the brain occurring at the cellular level during development and critically discuss new evidence about neuroplasticity following injuries.
10. Critically associate the advanced understanding about the neurological baseline of perception and sensory information with paradigms from clinical practice and clinical research
11. Analyze cognitive and behavioral functions of the human brain and critically relate these in the domain of neurorehabilitation

### **Course Content:**

1. Introduction, organization of the CNS, hierarchical structure of the CNS, clinical paradigms from the dysfunction
2. Synaptic transfer of neural impulses, neurotransmitters, membrane threshold, action potential, resting potential, ion channels. Alterations in synaptic transfer due to diseases, clinical associations (bradykinesia)
3. Motor control at the level of Spinal Cord (SC) (neural pathways of SC, reflexes control, Gait). Clinical correlations (decerebrations, pathological reflexes)
4. Transfer of stimuli to the muscle, lower motor neuron, function of the neuromuscular synapsis (upper and lower motor neuron diseases)
5. Ascending and descending pathways of the SC, clinical paradigms of pathways dysfunction
6. Movement control at the level of cerebellum, motor planning and motion refinement, muscle tone and balance control

7. Movement execution: cortex (primary motor cortex), subcortical nuclei (basal ganglia) and their role in motor control. Discussion of new evidence in clinical paradigms regarding deficits in motor control
8. Somatosensory systems and sensory integration
9. Speech and cognitive functions (attention, perception)
10. Memory and Learning. Applying associative learning paradigms to recovery after brain injury, dementia and Alzheimer Disease
11. Neurological Behavior (homeostasis, motive, limbic system, attention), clinical correlations
12. Neurological basis for emotions, mood and psychological behaviors

### Learning Activities and Teaching Methods:

Lectures, Personal study through written assignments

### Assessment Methods:

Interest – class participation, Written assignments, mid-term & final exam

### Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Principals of Neural Sciences (Greek Version)	Kandel RE, Schwartz HJ, Jessell MT	Paschalides	2016	9789604892877
Neuroscience at a Glance (Greek Version)	Barker, R. and Barasi, S	Parisianou	2015	9789603943952
Clinical Neuroanatomy & Neuroscience (Greek Version)	FitzGerland T, Gruener G & Mtui E.	Paschalides	2009	9789603998426

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Neuroscience Exploring the Brain (4 <sup>th</sup> ed)	Bear MF, Connors BW & Paradiso MA	Lippincott Williams & Wilkins	2016	9780781778176
Essentials of Neural Sciences & Behaviour (Greek Version)	Kandel ER, Schwartz JH, Jessell TM	University of Crete Publications	2011	9789605240752
Neuroscience: Fundamentals for rehabilitation	Lundy-Ekman L.	Saunders Company	2002	0721693733
Essential Neuroscience	Siegel A., Sapru H.	Lippincott Williams & Wilkins	2006	0781750776

## Course Syllabus MPTY-524 Neurorehabilitation I

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-524	Neurorehabilitation I	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	1st
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Neurological Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Sofia Lampropoulou	1st
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to Face	No	None

### Course Objectives:

The main objectives of the course are to:

- Deepen the understanding of the rehabilitation of patients with central nervous system pathology
- Analyse the pathophysiology of clinical symptoms in order to understand in depth the complications in rehabilitation due to deviations from the voluntary motor control
- Acquire the students the scientific knowledge and critical thinking in order to understand the “wrong way of behaviour” of the nervous system; and with an evidenced based approach to be able to set short and long-term goals and with clinical reasoning to propose appropriate therapeutic interventions
- Focus on Central Nervous System (CNS) pathology and provide students with evidence-based knowledge from the latest research and applied clinical neurological rehabilitation of adults and children
- Analyse thoroughly through real life scenarios and case studies the pathological patterns of movement and the ways these can be altered or improved based on brain capacity for neuroplasticity and reorganization

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Critically reflect on basic anatomical structures impairments in each neurological condition and critically discuss their clinical symptoms
2. Present a comprehensive understanding about the pathophysiology of symptoms in Central Nervous System conditions and relate these to real neurological case scenarios
3. Critically explain neurophysiological the pathological behavior of neurological patients
4. Differentiate among various pathological features and creatively connect these with plans for rehabilitation
5. Identify the functions affected by the pathological structures and be able to anticipate restrictions in patients' activity and participation
6. Plan a fully structured patient assessment based on valid and reliable assessment tools, based on up to date literature data
7. Critically prioritize therapeutic goals and, through proper justification, set the right short- and long-term goals and critically evaluate all components required for safe and efficient rehabilitation
8. Present an in-depth clinical reflection on the choice of appropriate therapeutic interventions
9. Present new clinical applications in support or counterpart of previous ones that are established, based on evidence-based data
10. Propose therapeutic protocols and guidelines based on guidelines and directions from global and international organizations
11. Organize exclusive and progressive rehabilitation treatment plans on a case-by-case basis
12. Understand the role of the physiotherapist as a member of a wider patient support team who apply multidisciplinary rehabilitation approach

### **Course Content:**

1. Neonatal conditions and clinical applications
2. Neurodevelopmental conditions: Cerebral Palsy. New evidence in assessment and rehabilitation
3. Genetical malformations & research evidence for their management
4. Cerebrovascular Accident (CVA) (Neuromuscular deficiencies due to spasticity)
5. Acquired brain injury and upper motor neuron disease (spasticity management)
6. Multiple Sclerosis and participation in research projects organized by the University faculty
7. Huntington's Disease, difficulties in management and case studies scenarios
8. Parkinson's Disease. Participation to research projects running by faculty members. Discussion about new techniques for assessment and rehabilitation
9. Cerebellar Disorders. New evidence for connection with learn, memory and speech. Design evidence based rehabilitation protocols
10. Brain tumors. Relation with anatomical structures and functions. Ways to support the chronic conditions of pain
11. Spinal Cord Injuries. New research data about the management and autonomy of the patient. Visit centers of paraplegic patients and organize events and research projects for clinical rehabilitation

12. Postural Control (Balance) disorders and reeducation. Critical review of evidence about new ways of balance management. Participation to balance exercise programs for elderly. New evidence about Otago Exercise Program.
13. Impaired gait patterns and clinical management in neurological patients and elderly people.

### **Learning Activities and Teaching Methods:**

Lectures with power point presentations. Practical application based on real case studies, self directed study with written assignments and short presentations in class. Participation at research projects, discussion on research data and sharing ideas about new research projects, based on gaps in the literature.

### **Assessment Methods:**

Interest – participation – attendance  
 Assignments – Class assessment – mid-term exam –final exam

### **Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Physical management for Neurological Conditions (Greek Version)	Stokes M.	Parisianou	2014	9789603949664
Management of the Motor Disorders of Children with Cerebral Palsy (Greek Version)	Scrutton D, Damiano D & Mayston M.	Parisianou	2004	9789603946014

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Bobath Concept: Theory and Clinical Practice in Neurological Rehabilitation	Raine S., Meadows L & Lynch-Ellerington M.	Willey-Blackwell	2009	9781405170413
Spasticity and its management with physical therapy applications al.	Armutlu, K. et	Nova Science Publishers Inc	2010	9781608761845
Neurological Rehabilitation, 6th ed.	Umphred DA.,	Mosby-Elsevier & eBook	2012	9780323075862 Ebook 9780323266499
Patient Management with Spinal Cord Injury (Greek Textbook)	Bakas EI	Konstantaras	2012	9789606802348
Neurological Physiotherapy. A problem-solving approach.	Edwards, S.	Churchill Livingstone	2002	9780443064401



## Course Syllabus MPTY-515 Musculoskeletal Rehabilitation II

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-515	Musculoskeletal Rehabilitation II	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Musculoskeletal Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr Manos Stefanakis Dr Christodoulos Fysentzou Dr Evdokia Billi	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Provide the students with the ability to critically assess and creatively organize treatment plans for musculoskeletal impairments of the lower quadrant in an advanced level.
- Equip students with advanced knowledge of the pathophysiology and clinical presentation of the most common pathologies of the lower quadrant.
- Promote students' ability to distinguish the source, the area and the tissue that are responsible for the impairment and critically utilize the concepts of Manual Therapy in order to autonomously treat the patient.
- Provide the students the ability to discriminate and classify patients in sub-groups based on their clinical presentation and tailor their treatment plan in order to improve their functional status.
- Critically appraise new evidence and systematically inform their clinical practice

## Learning Outcomes:

After completion of the theory part students are expected to be able to:

1. Understand up to date research evidence in regards to the mechanisms of musculoskeletal pathologies of the lower quadrant and their different healing phases.
2. Recognize the symptoms of various areas (lumbar spine, hip, knee etc.) and undertake a comprehensive clinical evaluation of that area.
3. Develop advanced skills in collecting subjective information from the patient and document it in a comprehensive manner
4. Demonstrate the ability to perform a detailed objective assessment of all the areas of the lower quadrant based on Manual Therapy concepts and critically prioritize all the components required for safe and efficient rehabilitation.
5. Critically evaluate the effects of contributing and aggravating factors in musculoskeletal pathologies of the lower quadrant and justify the solutions for their treatment including the patient's education.
6. Develop a deep understanding of the value of medical diagnosis and the need for mechanical classification of patients that are labeled with the same medical diagnosis.
7. Prove an ability in providing ergonomic advice for any contributing and aggravating factors based on scientific evidence.
8. Propose and justify a complete rehabilitation program for the treatment of the patients' symptoms and their functional rehabilitation based on the classification while predict, the precautions and contraindications based on medical diagnosis.
9. Be creative in applying Manual Therapy techniques for the treatment of various musculoskeletal disorders of the lower quadrant based on critical appraisal of evidence
10. Identify in an early stage all the contributing factors for chronic pain and modify the treatment accordingly.
11. Critically appraise research related to musculoskeletal rehabilitation with the aim to expand their knowledge and to reflect on their actions, through a critical thinking and a comprehensive problem solving approach

After completion of the practical part students are expected to be able to:

1. Perform a complete clinical evaluation of musculoskeletal problems of the lower quadrant.
2. Recognize serious pathologies that need referral for medical treatment.
3. Categorize musculoskeletal problems in sub-groups according to their clinical presentation including yellow flags.
4. Identify the contraindications for the use of manual therapy techniques and the precautions that are crucial for their application.
5. Choose evidence-based treatment techniques for the gradual improvement of the loading capacity of the tissues.
6. Apply the appropriate manual therapy techniques towards all joints of the lower quadrant in different positions and with the proper ergonomic considerations.
7. Teach the patient self-treatment techniques from various positions as well as exercises for the enhancement of the treatment outcome.
8. Re-assess the effect of the treatment with evidence-based outcome measures and modify the treatment accordingly.
9. Recommend practical advices for the contributing and aggravating factors.

**Course Content:**

1. Advanced and comprehensive assessment and treatment of the lumbar spine, hip, knee and ankle and foot complex
2. Special test for differential diagnosis of area of symptoms in the lower quadrant.
3. Special test for identifying tissues at fault in the lower quadrant.
4. Assessment and treatment of the peripheral nerves of the lower quadrant.
5. Manual therapy techniques for the lumbar spine, hip, knee, ankle and foot complex.
6. Indications, contraindications and limitations for mechanical treatment of the lower quadrant.
7. Classification of musculoskeletal disorders of the lower quadrant and therapeutic algorithms.
8. Mechanical presentation and classification of the most common pathologies of the lower quadrant (discogenic problems, tendinopathies, bursitis, sprains, anterior knee pain syndrome, peripheral neuropathies etc.).

**Learning Activities and Teaching Methods:**

Class lectures, class debates, practical sessions in physio labs, case studies

**Assessment Methods:**

Class participation, mini projects, mid-term exams, final exams.

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Maitland's Vertebral Manipulation, Vol I & II, 8 <sup>th</sup> ed	Hengeveld E & Banks K	Churchill Livingstone	2013	9780702040665
Manual Mobilization of the Joints Vol I (Extremities) & II (Spine), 7th ed.	Kaltenborn F	Orthopedic Physical Therapy Products	2011	9788270540709

A System of Orthopaedic Medicine, 3 <sup>rd</sup> ed	Ombregt L, Bisschop P, ter Veer HJ	Churchill Livingstone	2013	9780702052958
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### Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Scientific foundations and principles of practice in musculoskeletal rehabilitation	Magee, D.J. et al	Saunders	2007	9781416002505
Orthopedic Physical Assessment 6 <sup>th</sup> ed.	Magee, D.J	Saunders	2013	9781455709779
The manual of trigger point and myofascial therapy	Kostopoulos, D. et al.	Slack Inc	2001	9781556425424

## Course Syllabus MPTY-516 Exercise Physiology

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-516	Exercise Physiology	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required (Musculoskeletal Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Christoforos Giannaki & Dr. George Aphasidis	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Present scientific new evidence about the response of the physiological systems of human body to exercise (acute and chronic) in regards both to sports/exercise performance and overall health
- critically analyze the synergetic action of the various physiological systems during exercise taking into account the duration, type and intensity of exercise and the environmental conditions as well. Issues regarding the response to exercise of the cardiorespiratory and neuromuscular systems, thermoregulation and exercise metabolism will be examined in depth.
- critically evaluate the aerobic and anaerobic metabolism's contribution to energy supply and muscle function during exercise.
- study, analyze and criticize recent research related to exercise physiology, sports performance and health. The current course includes both practical and theoretical applications.

## **Learning Outcomes:**

After completion of the course students are expected to be able to:

1. Critically reflect on muscle function during exercise and the effects of exercise training in muscle function and performance
2. Critically evaluate the function of the nervous system in regards to movement control and the neuromuscular adaptations to exercise training (aerobic and resistance training)
3. Systematically understand and assess the energy systems during exercise (aerobic/anaerobic metabolism, hormones) based in current research in exercise physiology
4. Evaluate the physiological and metabolic adaptations to exercise training (acute and chronic)
5. Explain the cardiovascular and respiratory responses during exercise; effects of exercise training/lack of exercise
6. Develop critical awareness regarding temperature function during exercise (alterations during dehydration, exercise in high temperature etc)
7. Promote an in depth understanding of body composition and weight management (in both athletes and general population).
8. critically review and justify the application of exercise physiology and fitness principles for improving overall health and sports performance
9. Design an autonomously apply advanced fitness assessment, in line to scientific evidence

## **Course Content:**

1. Introduction to exercise and sports physiology
2. Energy systems and exercise (energy transfer in the human body, energy transfer during exercise, assessment of energy expenditure at rest and during exercise)
3. Response of the cardiovascular system to exercise and training
4. Response of the respiratory system to exercise and training
5. Scientific evidence about movement control during exercise
6. Exercise training (aerobic and anaerobic exercise training- resistance training)
7. Sports performance and environmental stress (exercise in medium and high altitude, exercise and thermal stress)
8. Exercise, weight loss and body composition
9. Present evidence on recent data about exercise and health
10. Fitness assessment

## **Learning Activities and Teaching Methods:**

Lectures, Discussions, Presentations from students, practical-lab applications

**Assessment Methods:**

Final examination, Mid-term exam, Presentation
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**Required Textbooks / Readings:**

Τίτλος	Συγγραφέας	Εκδοτικός Οίκος	Έτος	ISBN
Physiology of Sports and Exercise (6th ed)	Kenney L., Wilmore J., Costill D.	Human Kinetics	2015	9781450477673
Physiology of Sport and Exercise ( <i>Greek Version</i> )	Willmore J. & D.L. Costill	Paschalides	2006	9789603994169

**Recommended Textbooks / Readings:**

Τίτλος	Συγγραφέας	Εκδοτικός Οίκος	Έτος	ISBN
Laboratory Manual for Exercise Physiology, Exercise Testing, and Physical Fitness	Housh TJ, Cramer JT, Weir JP, Beck TW, Johnson GO.	Routledge	2016	978-1621590460
Exercise Physiology- Energy, Nutrition & Human Performance (6th ed)	Mc Ardle Katch and Katch	Lippincott, Williams & Wilkins.	2007	9780781749909 (ISSN) 0781749905
Exercise Physiology: Theory & Application to Fitness & Performance: Exercise Physiology, 6 <sup>th</sup> ed	Powers, Scott and Howley	McGraw-Hill.	2007	0073028630

## Course Syllabus MPTY-517 Sports Rehabilitation

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-517	Sports Rehabilitation	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Science	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Musculoskeletal Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Christodoulos Fysentzou Dr. Manos Stefanakis	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to develop students' ability to:

- Critically evaluate the literature and synthesize the latest data regarding the assessment and treatment of sports injuries of the upper and lower quadrant.
- Classify any given injury and plan a rehabilitation program based on advanced scientific knowledge of the physiology, pathology and biomechanics of the sports injury.
- Recognise any internal (muscle imbalances, lack of extensibility, warm up etc.) and external (equipment, weather etc.) factors that might affect an injury, and address it in an evidence based context.
- Evaluate and critically select the best treatment options for sport injuries based on up-to-date evidence.



## Learning Outcomes:

After completion of the theoretical part students are expected to be able to:

1. Recognize the factors that affect sport injuries of the upper and lower quadrant as well as the healing stages of the injured tissues.
2. Utilize the knowledge on the pathophysiology of sports injuries including overuse injuries and suggest advanced and efficient rehabilitation strategies.
3. Develop the ability to interpret the literature for the best ways to collecting subjective information from the athlete and document it in a systematic manner.
4. Carry out a detailed clinical assessment of any area of the upper and lower quadrant using reliable and valid measurement outcomes
5. Understand and prioritize the effects of internal and external factors on sport injuries and recognize which of these factors can be modified.
6. Enhance the clinical skills in providing first aids for sport injuries in the field.
7. Organize a complete and evidence-based intervention programme for the functional rehabilitation for all sport injuries of the upper and lower quadrant.
8. Develop the necessary skills to access up-to-date evidence in relation to sport rehabilitation and constantly acquiring new knowledge.

After completion of the practical part students are expected to be able to:

1. Implement a detailed clinical assessment of sport injuries.
2. Assess all parameters for the participation in sport activities as well as any adaptations that happened during training.
3. Choose evidence-based interventions that will allow the injured tissues to gradually tolerate higher loads.
4. Design rehabilitation programmes depending on the injury, sex, age and patients' special goals.
5. Teach patients self-treatment strategies and exercises for the improvement of treatment effects.
6. Re-assess the effect of the interventions with evidence-based outcome measures and modify the intervention accordingly.
7. Provide practical first aid solutions for the treatment of acute sport injuries in the field.

## Course Content:

1. Physiological adaptations of sport activities
2. Tissue healing process of sport injuries
3. Biomechanical factors of sport injuries of the upper quadrant
4. Evaluation and treatment of sport injuries of the cervical spine
5. Evaluation and treatment of sport injuries of the shoulder complex
6. Evaluation and treatment of sport injuries of the elbow and forearm
7. Evaluation and treatment of sport injuries of the hand complex
8. Plyometric exercises for tendinopathies of the upper quadrant
9. Kinetic control problems in tendinopathies of the upper quadrant
10. Assessment of range of motion, strength, extensibility, endurance and proprioception
11. Assessment and rehabilitation of sport injuries of specific sport activities
12. First aids in the field

**Learning Activities and Teaching Methods:**

Class lectures, class debates, practical sessions in physio labs, case studies
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**Assessment Methods:**

Class participation, mini projects, mid-term exams, final exams
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**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Examination of Orthopedic and Athletic Injuries	Starkey C, Ryan J & Brown S	Davis	2015	9780803645035
Physical Rehabilitation of the Injured Athlete. Illustrated	Andrews J, Harrelson G & Wilk K	Saunders	2012	9781437724110
Sports Rehabilitation and Injury Prevention	Comfort P & Abrahamson E	Wiley & Blackwell	2010	9780470975893

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Clinical Sports Medicine, 5 <sup>th</sup> ed.	Brukner P & Khan K	McGraw-Hill	2016	9781743761380
Sports Medicine. A Comprehensive Approach, 2nd ed.	Scuderi G & Mc Can P	Mosby, Elsevier	2005	9780323023450
Rehabilitation Of Sports Injuries: Scientific Basis	Walter R. Frontera	John Wiley & Sons	2008	9781405140560

## Course Syllabus MPTY-518 Functional Rehabilitation

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-518	Functional Rehabilitation	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Musculoskeletal Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Prof Paraskevi Malliou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to develop students' ability:

- To design, organize and instruct a complete program of functional rehabilitation.
- To critically analyze the pathology, clinical pathophysiology, phases of tissue healing and the different stages of rehabilitation of any given musculoskeletal dysfunction.
- To reasonably justify the adaptations of a rehabilitation program with respect to the tissue healing stages.
- Critically evaluate the psycho-social factors that affect the rehabilitation process and organize the program accordingly.
- Develop the theoretical and practical knowledge underpinning functional rehabilitation

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Critically discuss the pathology, pathophysiology of any given patient with musculoskeletal dysfunction.
2. Debate the different healing potential of the tissues as well as the biomechanical factors that can affect the patient they are treating.
3. Critically decide the subjective and objective examination procedures of a patient with musculoskeletal dysfunction.

4. Argue for the appropriate outcome measures in order to assess the effectiveness of their treatment approaches based on up-to-date evidence.
5. Create realistic treatment goals based on the patients' special needs, presenting advanced clinical reasoning
6. Present critical thinking and advanced clinical reasoning in organizing a complete treatment program for the functional rehabilitation of the patient
7. Debate about treatment and outcome measures choices using supporting research data
8. Critically apply techniques, exercises and physical modalities for the rehabilitation of any given patient, based on research evidence
9. Prove an enhanced ability to teach the patient self-treatment approaches as well as exercises for the maintenance and improvement of the treatment effectiveness.
10. Re-assess the treatment effectiveness with up-to-date outcome measures
11. Present their treatment choices in the form of a case study presentation in front of colleagues, supported by scientific evidence.

### **Course Content:**

1. Assessment and functional rehabilitation of musculoskeletal disorders of the lumbar spine, hip, knee and foot complex
2. Assessment and treatment of the nerve tissue of the upper and lower quadrant
3. Indications, contraindications and precautions for mechanical treatment of the upper and lower quadrant
4. Classification of musculoskeletal disorders of the lower quadrant and therapeutic algorithms
5. Mechanical presentation and classification of the most common musculoskeletal disorders of the upper and lower quadrant (discogenic pain, tendinopathies, bursitis, sprains, peripheral neuropathies etc.)
6. Physiological adaptations of sport activities
7. Healing phases of the sports trauma
8. Assessment and treatment of sports injuries
9. Plyometric exercise of tendinopathies of the upper quadrant
10. Problems with kinetic control of the upper quadrant
11. Assessment of muscle strength, range of motion, endurance and proprioception
12. Assessment and rehabilitation in specific sports
- 13. First aids in the field**

### **Learning Activities and Teaching Methods:**

Class lectures, class debates, practical sessions in physio labs, case studies

**Assessment Methods:**

Class participation, mini projects, mid-term exams, final exams.
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**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Examination of Orthopedic and Athletic Injuries	Starkey C, Ryan J & Brown S	Davis	2015	9780803645035
Physical Rehabilitation of the Injured Athlete. Illustrated	Andrews J, Harrelson G & Wilk K	Saunders	2012	9781437724110
Maitland's Vertebral Manipulation, Vol I & II, 8 <sup>th</sup> ed	Hengeveld E & Banks K	Churchill Livingstone	2013	9780702040665

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Sports Rehabilitation and Injury Prevention	Comfort P & Abrahamson E	Wiley & Blackwell	2010	9780470975893
Clinical Sports Medicine, 5 <sup>th</sup> ed.	Bruckner P & Khan K	McGraw-Hill	2016	9781743761380
Manual Mobilization of the Joints Vol I (Extremities) & II (Spine), 7 <sup>th</sup> ed.	Kaltenborn F	Orthopedic Physical Therapy Products	2011	9788270540709
A System of Orthopaedic Medicine, 3 <sup>rd</sup> ed	Ombregt L, Bisschop P, ter Veer HJ	Churchill Livingstone	2013	9780702052958
Rehabilitation Of Sports Injuries: Scientific Basis	Walter R. Frontera	John Wiley & Sons	2008	9781405140560

Scientific foundations and principles of practice in musculoskeletal rehabilitation	Magee, D.J. et al	Saunders	2007	9781416002505
Orthopedic Physical Assessment 6 <sup>th</sup> ed.	Magee, D.J	Saunders	2013	9781455709779
Sports Medicine. A Comprehensive Approach, 2nd ed.	Scuderi G & Mc Can P	Mosby, Elsevier	2005	9780323023450

## Course Syllabus MPTY-525 Neurological Rehabilitation II

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-525	Neurological Rehabilitation II	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Neurological Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Christina Michailidou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Go into details about the rehabilitation of patients with neurological diseases of peripheral etiology and critically evaluate new scientific evidence regarding rehabilitation
- Critically evaluate the symptoms of diseases of the peripheral system caused by degenerative lesions of peripheral nerve tissue, genetic abnormalities, nerve traps and nerve injuries, nerve root and / or spinal cord injury (SCI) in order to understand the complications of restoration
- Present an advanced ability to organize a thorough assessment by selecting the appropriate, reliable and valid measurement outcomes
- Acquire the scientific knowledge and critical thinking in order to understand the malfunctioning behavior of the nervous system
- Enhance an informed view of new research and clinical applications with recent literature evidence while directing them in the location and organization of short and long-term goals through proper clinical reasoning and support for appropriate therapeutic interventions.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Present a comprehensive understanding about the pathophysiology of symptoms in peripheral nervous system (PNS) disorders and relate these to real neurological case scenarios
2. Critically explain in neurophysiological terms the pathological behavior by understanding the pain physiology and present new scientific data on its management.

3. Differentiate among various pathological signs and creatively organize plans for rehabilitation.
4. Recognize and critically evaluate the functions that will be affected by the diseased structures and be able to predict restrictions on patient's activities participation.
5. Perform a functional assessment (eg assessment of position & balance) through these constraints and organize primarily preventative interventions (falls' prevention), in line to new scientific evidence.
6. Organize a fully structured assessment based on valid and credible assessment tools available and cross culturally adapted to mother language.
7. Critically evaluate the risk factors in rehabilitation, such as when transporting and moving patients with nervous system impairment and critically analyze new data regarding manual handling
8. Critically prioritize the therapeutic goals they set and, through proper justification, to set the appropriate short- and long-term goals.
9. They present an in-depth clinical reasoning on the choice of appropriate therapeutic interventions for safe and efficient rehabilitation.
10. Based on evidence-based data to present new clinical applications in support or contradiction of previous ones that are already established.
11. Propose therapeutic protocols and guidelines based on international guidelines from global & international organizations.
12. Organize progressive rehabilitation programs on a case-by-case basis and share ideas for new research in the field of neurological rehabilitation.
13. Understand the physiotherapist's role as a member of a multidisciplinary team for the rehabilitation of the patient.

### Course Content:

1. Assessment of dangers during body weight transfer, new evidence and guidelines
2. Weight transfer techniques in managing patients with neurological conditions, caution to risk factors
3. Pain Theory, Pain pathways, Physiology of Pain and new evidence on its management. Organize evidence based practical paradigms for chronic pain management techniques
4. Pain Management, Natural Means of treatment. Participate and discuss data from clinical research with chronic neurological patients
5. Postural assessment, Fall's prevention, Balance, Connective tissue pain. New evidence for ways to prevent falls. Organize seminars of presenting exercise programs for falls prevention on elderly
6. Peripheral Nerve Trapping / Thoracic Outlet Syndrome and research evidence for their management
7. Peripheral polyneuropathy (Guillain Barre). New evidence in assessment and rehabilitation
8. Paralysis of facial nerve and progression in rehabilitation
9. Amyotrophic lateral sclerosis (Charcot Disease) / Charcot-Marie-Tooth Degenerative Polyneuropathy (Fibular Atrophy), difficulties in management and case studies scenarios
10. Hippuric Damages, Bladder Dysfunction & Management. New evidence in pelvic floor management



11. Bladder Dysfunction Pelvic Floor Exercises. Discussion about new techniques for assessment and rehabilitation
12. Carpal Tunnel Syndrome / Control & Management of Grabbing, Handling & Handling of Objects.

### **Learning Activities and Teaching Methods:**

Lectures with advanced power point presentations. Laboratory case studies applications. Personal study via written assignments and class presentations.

### **Assessment Methods:**

Interest-participation-attendance, Assignments-Tests in the classroom, Mid-term exams, Final examination

### **Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Peripheral Neuropathy I & II	Dyck P.J., Thomas P.K.	Elsevier	2005	9780721694917
Manual Therapy for the Peripheral Nerves	Barral J.P., Croibier A.	Churchill Livingstone	2007	9780443103070

### **Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Pocketbook of Neurological Physiotherapy	Lennon S & Stokes M.	Churchill Livingstone	2009	9780443068546

Physical Management in Neurological Conditions	Stokes, M.	Churchill Livingstone	2011	9780702054693
Neurological Rehabilitation 6th ed	Umphred DA	Mosby- Elsevier	2012	9780323075862
Clinical Neuroanatomy & Neurosciences (Greek Version)	FitzGerland T, Gruener G & Mtui E	Paschalidis	2009	9789603998426
Neuroscience & Behaviour (Greek Version)	Kandel ER, Schwartz JH, Jessell TM	University Publications Crete	2011	9789605240752

## Course Syllabus MPTY-526 Measurement Outcomes in Neurorehabilitation

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-526	Measurement Outcomes in Neurorehabilitation	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Neurological Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Sofia Lampropoulou Dr. Maria Kyriakidou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Go in details on the fundamental principles of neurological evaluation and knowledge of the available reliable and valid means of assessment for patients with neurological diseases
- Make detailed references to the psychometric characteristics of the assessment tools and find cross culturally adapted outcomes in mother language
- Enhance the scientific knowledge and critical thinking in selection of the appropriate means of assessment through a multitude of available means based on the neurological condition, the stage of the disease, the clinical picture of the patient
- Match evaluation tools to the diseases they will be taught in Neurorehabilitation I and II and their practical application to familiarize students with their use.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Critically reflect on the basic principles of assessment of a patient with a neurological condition and relate these to creatively organize a safe and efficient treatment plan.
2. Present a deep and advanced understanding of the pathophysiology of the symptoms presented in diseases of the Central and Peripheral Nervous System (CNS) in order to adapt the assessment methods accordingly.
3. Present a critical awareness of the importance of psychometric characteristics for selecting

- valid and reliable assessment tools. Additionally, the students will demonstrate the comprehensive understanding in the ways of validating such tools in mother language.
4. Prove an advanced ability to organize the parts of the neurological assessment based on valid and reliable assessment tools in a scientific and in-depth clinical judgment.
  5. Based on evidence-based data, they should be able to present upgraded forms and ways of clinical evaluation.
  6. Be aware of the importance of adapting tools of assessment (eg questionnaires, scales) to other languages and populations and develop an advanced understanding of the guidelines regarding measurement tools adaptation.
  7. Critically apply the knowledge of the measurements tools cross cultural adaptation and validation, on efficiently organize an integrated way of cross-cultural adaptation of foreign language assessment instruments into Greek.
  8. Critically evaluate the shortcomings and drawbacks of the various assessment tools by providing substantiated views on how to improve them.
  9. Critically reflect and clinically interpret the results of the assessment and be able to link the deficits highlighted through the evaluation with appropriate and evidence based therapeutic interventions.
  10. Conduct differential diagnosis between basic conditions depending on the results of the neurological assessment.

#### **Course Content:**

1. Advanced and comprehensive ways of assessing a patient with neurological condition.
2. Psychometric characteristics of assessment scales and their importance in selecting appropriate assessment tools. Participation to research projects running by faculty members regarding cross cultural adaptation of measurement outcomes. Discuss research data
3. Motor Skills Acquisition Checklist (MSAC) for babies up to 24 months of age. New evidence in it utility
4. Infant Motor Profile Assessment (IMP). Discussion of its reliability and validity. Present research questions regarding its validation
5. Gross Motor Function Measure (GMFM): Assessment Scale of Children with Cerebral Palsy. Debate on its utility in clinical practice and research
6. Motor Assessment Scale (MAS) for adult patients with stroke. New evidence about its adaptation and validation into Greek language
7. Evaluation of Brain Stem and Spinal Cord Reflexes and Evaluation of Pathological Reflexes.
8. Balance Assessment Scales BERG and mini-BESTest. New evidence regarding their utility to neurological patients, data for their validity and their cross cultural adaptation into Greek
9. Probability / fall risk assessment in elderly patients (ProFouND: Prevention of Falls Network of Dissemination) Proposals and Protocols from the European Dissemination Network. New research evidence and discussion on current research projects.
10. Function and mobility assessment in patient with Spinal Cord Injury: Spinal Cord Independence Measurement (SCIM) and ASIA Impairment Scale
11. Evaluation of the vestibular system, vertigo, nystagmus, cerebellar tests, positional tests and new evidence regarding their management
12. Pain assessment/ pain tools and new literature in their validation and utility

**Learning Activities and Teaching Methods:**

Lecture with advanced power point presentation. Laboratory case studies applications. Personal study via written assignments and class presentations.

**Assessment Methods:**

Interest-participation-attendance, Assignments-Tests in the classroom, Mid-term exams, Final examination

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Treatment of motor disorders in children with cerebral palsy (Greek Version)	Scrutton D, Damiano D & Mayston M.	Parisianou	2004	9789603946014
Spasticity and its management with physical therapy applications	Armutlu, K. et al.	Nova Science Publishers Inc	2010	9781608761845

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Kinetic Control: From Research to Clinical Practice (Greek Version)	Shumway-Cook A, Woollacott M.	Paschalidis	2012	9604891758
Bobath Concept: Theory and Clinical Practice in Neurological Rehabilitation	Raine S., Meadows L & Lynch-Ellerington M.	Wiley-Blackwell	2009	9781405170413

Neurological Rehabilitation, 6th ed	Umphred DA.,	Mosby-Elsevier & eBook	2012	9780323075862 Ebook 9780323266499
Physical Management in Neurological Conditions	Stokes, M.	Churchill Livingstone	2011	9780702054693
Rehabilitation of patient with Spinal Cord Injury (Greek Textbook)	Bacas El.,	Constantaras	2012	9789606802348
Neurological Physiotherapy. A problem-solving approach	Edwards, S.	Churchill Livingstone	2002	9780443064401
Neuroscience & Behaviour (Greek Version)	Jessell TM Kandel ER, Schwartz JH,	University Publications Crete	2011	9789605240752
Clinical Neuroanatomy & Neurosciences (Greek Version)	FitzGerland T, Gruener G & Mtui E.	Paschalidis	2009	9789603998426

## Course Syllabus MPTY-527 Clinical Applications in Neurorehabilitation

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-527	Clinical Applications in Neurorehabilitation	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Required (Neurological Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Sofia Lampropoulou Dr. Maria Kyriakidou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Go in details in the use of therapeutic exercise as a mean of treating musculoskeletal and neurological diseases
- Make special reference and present advanced and up to date evidence about the implications of specific therapeutic techniques such as the Proprioceptive Neuromuscular Facilitation, the Bobath Neurodevelopment Technique, functional mobilization and isokinetic control, based on new research data.
- Provide students with the scientific knowledge and critical thinking to develop the theoretical framework for the use of these techniques and with laboratory exercises and applications to be able to critically select the appropriate technique based on a problem solving approach of case studies and clinical cases
- Thoroughly analyze via real-life incidents and case studies the functional applications of these therapies in order to obtain from the students an integrated clinical reasoning about the benefits and possibilities of each technique.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Deeply and thoroughly understand the fundamental principles of each therapeutic approach and critically justify their selection
2. Recommend the clinical extensions of these therapies and the possibilities of their

- application in a variety of clinical cases of neurological or musculoskeletal nature
- 3. Critically explain and neurophysiologically discuss the action mechanism of these techniques and their correlation with motor control and kinetic learning
- 4. Present a deep and advanced understanding of the expected benefits of these therapeutic interventions and be able to argue for their application in rehabilitation in line to recent scientific evidence
- 5. Demonstrate critical thinking and in-depth clinical reasoning in choosing the appropriate therapeutic intervention for each clinical event
- 6. Alternate the therapeutic interventions according to the stage of the disease, the symptoms, the particularities and the preferences of each patient in order to achieve a safe and efficient patient management
- 7. Based on evidence-based data, to present new extensions to the functional and clinical applications of these therapies in support or contradiction of prior established ones
- 8. Upgrade therapeutic techniques based on international rules and guidelines from global & international organizations
- 9. Using the principles of these therapeutic techniques to be able to organize progressive rehabilitation programs on a case-by-case basis and to interfere with cognitive, sensory-motor, behavioral, and social functions of the patient
- 10. Understand the functional objectives for each patient and based on them to adjust the therapeutic exercise for the patient's functional reintegration into daily activities and habits.

#### **Course Content:**

- 1. PNF Upper Limbs, new evidence and adaptations
- 2. PNF Upper Body, and its utility to a variety of case scenarios
- 3. PNF Lower Limbs, and critical discussion of their application to neurological and musculoskeletal rehabilitation
- 4. PNF Lower Body, presentation on case scenarios and discussion on new evidence regarding the applicability of PNF for motor control and motor learning
- 5. Bobath Adults Part I, basic concepts and evidence on principles for neurological rehabilitation.
- 6. Bobath Adults Part II, advanced concepts and evidence on principles for neurological rehabilitation.
- 7. Bobath Children Part I. basic concepts and evidence on principles for neurological rehabilitation.
- 8. Bobath Children Part II advanced concepts and evidence on principles for neurological rehabilitation.
- 9. Functional Exercises in Neuro-musculoskeletal Conditions Part I and participation in clinical research projects
- 10. Functional Exercises in Neuro-musculoskeletal Conditions Part II and participation in clinical research projects
- 11. Kinetic Control and Applications Part I, new evidence in its clinical and research application
- 12. Motion Control and Applications Part II, new evidence in its clinical and research application



**Learning Activities and Teaching Methods:**

Lecture with advanced power point presentation. Laboratory case studies applications. Personal study via written assignments and class presentations.

**Assessment Methods:**

Interest-participation-attendance, Assignments-Tests in the classroom, Mid-term exams, Final examination

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Bobath Concept: Theory and Clinical Practice in Neurological Rehabilitation	Raine S., Meadows L & Lynch-Ellerington M.	Wiley-Blackwell	2009	9781405170413
PNF in Practice: An Illustrated Guide. 4th ed.	Adler SS., Beckers D. & Back M.	Springer	2014	9783642349874

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Neuroscience & Behaviour (Greek Version)	Kandel ER, Schwartz JH, Jessell TM	University Publications Crete	2011	9789605240752

## Course Syllabus MPTY-528 Neuromusculoskeletal Diseases and Rehabilitation

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-528	Neuromusculoskeletal Diseases and Rehabilitation	5
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	2 <sup>nd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Compulsory (Neurological Direction)	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Christina Michailidou	1 <sup>st</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Deepen into the principles of assessment and proper management of various forms of neuromuscular diseases
- Make detailed references to the pathophysiology and clinical presentation of each disease and to establish the correct differential diagnosis between the different forms
- Have the students acquire the scientific knowledge and critical thinking so that they can set the right short and long term goals based on the patient's clinical picture and choose the appropriate therapeutic plan
- Present case studies of children or adults with neuromuscular conditions, and students can, based on documented research data, discuss and select through group work and critically evaluate the appropriate assessment tool for each patient and offer progress to the treatment plan they choose.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Deeply and thoroughly understand the basic principles of inheritance and distinction of neuromuscular diseases based on an anatomical damage point and critically reflect on these principles for applying effective rehabilitation protocols.
2. Critically evaluate the pathophysiology of the symptoms presented in the various neuromuscular diseases.
3. Develop an enhanced ability to set the right targets for rehabilitation based on a deep understanding of the primary and secondary neuromuscular deficits
4. Propose and justify upgraded, credible and valid assessment tools to conduct a

- comprehensive inventory of deviations and deformities based on scientific evidence,
5. Critically and thoroughly interpret the results of the evaluation and be able to set primary and secondary therapeutic goals.
  6. Critically analyze the new research data and global guidelines on the management of neuromuscular diseases.
  7. Autonomously design appropriate therapeutic interventions based on the patient's clinical presentation and in line to evidence based approaches.
  8. Critically choose from a variety of interventions appropriate for each patient based on age and on disease particularities.

### **Course Content:**

1. Types of neuromuscular diseases based on inheritance and based on the anatomical structure that is diseased.
2. Pathophysiology and clinical presentation of every form of neuromuscular disease.
3. Genetic Diseases of Muscular Damage: Muscular Dystrophies Duchenne, Baker
4. Genetic diseases of neuromuscular lesion damage: myasthenia gravis, Lambert-Eaton syndrome
5. Genetic disorders of upper motor neuron damage: cortex-spinal muscular dystrophy
6. Genetic diseases of peripheral nerve damage: Charcot-Marie-Tooth polyneuropathy, lateral amyotrophic sclerosis.
7. Evaluation of Mobility and Sensibility, new evidence on their management.
8. Progressive difficulty exercises programs.
9. Home based exercise programmes, new evidence about their efficiency.
10. New research data to address neuromuscular conditions.
11. New ways for managing muscle tone disorders in neuromuscular disorders
12. Evidence-based approaches for muscle strength and joint range of motion in neuromuscular conditions
13. Orthotic and gait aids for the management and facilitation of transport in neuromuscular conditions.
14. Differences in rehabilitation between neuromuscular diseases of the central and peripheral neuron

### **Learning Activities and Teaching Methods:**

Lecture with advanced power point presentation, videos, clinical discussions between student groups and teachers, and lectures by visiting professors.

Personal study through written assignments (individually or in small groups) using valid research sources and classroom presentations.

**Assessment Methods:**

Interest-participation-attendance. Assignments-Tests in the classroom, Mid-term exams, Final examination

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Neuromuscular Disorders in Clinical Practice	Katirji et al.	Springer	2014	9781461465676
Neuromuscular Disorders	Amato & Russell	McGraw-Hill Education	2015	9780071752503

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Electromyography and Neuromuscular Disorders: Clinical-Electrophysiologic Correlations	Preston & Shapiro	Elsevier	2013	9781455726721
Neurological Rehabilitation 6th ed.	Umphred DA.,	Mosby-Elsevier & e-book	2012	9780323075862 e-book 9780323266499
Physical Management in Neurological Conditions	Stokes, M.	Churchill Livingstone	2011	9780702054693
Neuroscience & Behaviour (Greek Version)	Kandel ER, Schwartz JH, Jessell TM	University Publications Crete	2011	9789605240752

## Course Syllabus MPTY-551 Physiology of Chronic Pain

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-551	Physiology of Chronic Pain	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	3 <sup>rd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Elective	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr Christina Michailidou	2 <sup>nd</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Provide students with the advanced theoretical and practical knowledge that will allow them to critically evaluate and sufficiently treat chronic pain conditions
- Explain the anatomy and physiology of chronic pain as well as on the descending modulating mechanisms of the painful stimulus
- Distinguish between acute and chronic pain in terms of causes, biological significance and prognosis
- Discuss and explain the deep understanding of the biological, psychological and social effects of pain
- Design and implement chronic pain management programs based on the principles of cognitive and behavioural therapy, and incorporate measures to prevent chronic pain syndrome
- Critically review trends in theory and management of chronic patients

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Critically discuss the anatomy and physiology of the nociceptive system.
2. Understand and critically debate the mechanisms of peripheral and central sensitization.
3. Expand their knowledge about the physiology of descending pain modification mechanisms (inhibitory and facilitating).
4. Discuss and debate about the role of learning mechanisms and the role of the sympathetic nervous system in chronic pain.

5. Critically appraise evidence based research about the role of the predisposing factors in the development of chronic pain syndrome.
6. Recognize the complex nature of pain and critically evaluate its psychological, social and professional implications in the patient's life.
7. Develop advanced skills in designing holistic chronic pain management programs based on the most evidence-based methods and according to the principles of cognitive and behavioral therapy.

At the end of the practical part of the course the students will be able to:

1. Perform a structured clinical examination in patients with painful syndromes.
2. Recognize through the clinical picture and the physical examination of the patient the existence of central and peripheral changes in the pain pathway.
3. Explain to the patient the meaning and biological value of pain as a protective mechanism as well as the lack of protective value in the case of chronic pain.
4. Educate the patient about the disassociation of chronic pain from tissue damage as well as the healing process.
5. Modify the patients' perceptions of their problem and propose solutions for the psychological, social and professional problems it creates.
6. Design, in collaboration with the patient, programs of graded exposure in order to increase the functional capacity and social participation of the patient without provoking their symptoms.
7. Advise the patient how to deal with relapses of pain.
8. Identify in a timely manner patients who will need the assistance of another specialist (psychologist, physician, etc.) and refer them to him.

#### **Course Content:**

1. Anatomy and physiology of the nociceptive system
2. Cerebral centers for the treatment of painful stimuli and their significance
3. Mechanisms of central and peripheral sensitization to chronic pain
4. Descending pain modification systems (inhibitory and facilitatory)
5. Mechanisms of learning in the maintenance and inhibition of pain (habituation, behavioral enhancement, classical learning, executive learning)
6. The effect of the sympathetic and immune system on the pain system
7. Clinical evaluation of red, yellow, blue and black flags
8. Advanced chronic pain management techniques
9. Advanced cognitive and behavioral therapies in pain management

#### **Learning Activities and Teaching Methods:**

Lectures, Discussion, Practice in the laboratory, Clinical scenarios

**Assessment Methods:**

Interest-participation-attendance, assignment-test, mid-term exam, final examination

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Pain in practice: theory and treatment strategies for manual therapists	Hubert van Griensven	Butterworth Heinemann	2005	9780750688840
Pain management: An interdisciplinary approach	Chris Main, Chris Spanswick	Churchill Livingstone	2000	9780443056833

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Luis Gifford (and Physiotherapy Pain Association)	Topical Issues in Pain (series 1-5)	CNS press	2013	9781491876732 9781491876718 9781491877708 9781491876770 9781491876695

## Course Syllabus MPTY-552 Pain and Reflective Therapies

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-552	Pain and Reflective Therapies	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	3rd
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Elective	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Maria Kyriakidou	2nd
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Provide students with advanced theoretical and practical knowledge in order to use reflective therapies (e.g acupuncture) as part of their treatment in pain management
- Understand and implement different ways of stimulating, acupuncture and myofascial trigger points in order to inhibit musculoskeletal pain
- Offer a detailed description of acupuncture and myofascial trigger points for most specific muscles and the means of stimulation of these points
- Critically discuss the evidence-based knowledge of indications and contraindications of acupuncture and reflective therapies and the possible mechanisms of action

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Debate about the mechanisms of action of acupuncture
2. Critically evaluate the literature regarding the effectiveness of acupuncture in patient's symptoms
3. Distinguish the most predominant mechanism of pain and choose acupuncture parameters accordingly
4. Explain how the pathology of musculoskeletal problems leads to the appearance of muscle trigger points
5. Classify trigger points into categories (active, satellite) according to patient's clinical picture
6. Accomplish a properly structured physical examination of muscles in order to identify trigger points and choose the appropriate means of deactivation
7. Effectively inform the patient in relation to the mechanisms of action of acupuncture action, the possible (undesirable effects), the contraindications and the risks of acupuncture treatment



8. Identify and evaluate indications and contraindications of acupuncture application in accordance to the problem and mechanisms of pain

After completion of practical part of the course students are expected to be able to:

11. Identify and utilise acupuncture points and myofascial trigger points in most important musculoskeletal disorders
12. Choose trigger points according to the suffering area and the problem
13. Detect predisposing factors (postures, movements) that cause or maintain the presence of myofascial trigger points and provide practical advices and solutions for their resolution
14. Choose the appropriate way of stimulating in accordance to the problem and patient's special needs
15. Reassess the effect of therapeutic intervention with valid assessment tools and modify the intervention accordingly
16. Ensure patient's informed consent and apply securely stimulation of acupuncture points considering patient's values and culture

### **Course Content:**

1. Introduction to acupuncture (definition, history, theories, development and types of acupuncture)
2. Myofascial trigger points (definition, pathophysiology, categories, description of location)
3. Means and application of stimulation of acupuncture points and myofascial trigger points
4. Acupuncture points and myofascial trigger points in upper extremity
5. Acupuncture points and myofascial trigger points in lower extremity
6. Acupuncture points and myofascial trigger points in trunk and special precautions
7. Theories of acupuncture mechanisms of action
8. Mechanisms of pain and selection of points
9. Acupuncture points and myofascial trigger points in spinal disorders
10. Acupuncture points and myofascial trigger points in soft tissue injuries (muscle strain, tendonopathies, etc)
11. Acupuncture points and myofascial trigger points in degenerative diseases
12. Scientific evidence for the clinical application of acupuncture

### **Learning Activities and Teaching Methods:**

Lectures, Discussion, Practice in the lab, Clinical scenarios

### **Assessment Methods:**

Interesting-participation-presence to the lectures, essays, tests, intermediate exams, final exams

### **Required Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Acupuncture in Chronic Musculoskeletal Pain	Miltiadis Karavis	Parisianou	2011	960-394-800-4
Acupuncture in Manual Therapy	Longbottom, Jennie	Churchill Livingstone	2010	9780443067822
Physiology of Acupuncture (Greek Textbook)	Miltiadis Karavis	Zevelakaki	1999	960-7397-16-9

#### **Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
The Road in Acupuncture (Greek Textbook)	Miltiadis Karavis	Εκδόσεις I.T.M.E.	2006	9789608918405
Acupuncture in Physiotherapy: Key Concepts and Evidence-Based Practice	Val Hopwood	Butterworth-Heinemann	2004	9780750653282
Acupuncture: Treatment of Musculoskeletal Conditions	Chris Morris	Butterworth-Heinemann	2001	9780750651738

## Course Syllabus MPTY-553 Movement Analysis in Rehabilitation

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-553	Movement Analysis in Rehabilitation	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	3 <sup>rd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Elective	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Prof. Giannis Giakas	2 <sup>nd</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Equip the students with a critical and systematic understanding of the physiological principles of gait and improve their ability to assess gait disorders.
- Develop students' skills in analysing motion in two and three dimensions in a gait analysis lab.
- Critically debate the clinical importance of movement analysis in musculoskeletal and neurological disorders as well as the use of orthotics for the rehabilitation of the most common gait or movement disorders.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Critically analyse the normal gait cycle qualitatively and quantitatively.
2. Critically assess neuro-muscular disorders of the gait cycle
3. Appraise the literature on the most common methods of analyzing movement
4. Assess movement using qualitative methods and score its quality in appropriate and validated scales, based on scientific evidence
5. Understand the limitations of the different pieces of equipment of a kinesiology lab
6. Be creative and systematic in assessing gait and motion using quantitative methods.
7. Systematically analyze quantitative and qualitative data of human gait and understand their clinical implications.
8. Gain scientific and evidence-based knowledge of the basic principles of orthotic treatment.

**Course Content:**

1. Quantitative analysis of human movement. Classification of pathological movement, physiological adaptations and treatment.
2. Different aspects of normal gait. Range of movement of different joints during gait. The significance of ground reaction forces. Kinematic and kinetic analysis of gait. Normal energy consumption.
3. Pathological gait and different adaptation strategies
4. 2-D analysis of movement and gait. Tools for measurement of movement in one plane.
5. 3-D analysis of gait. Basic principles of 3d analysis of gait for clinical purposes. Practical: analysis of gait in a normal person.
6. Practical: measurement in the kinesiology lab of the gait of a patient with cerebral palsy
7. Analysis of measurements from the practical session. Analysis of clinical implication. Analysis of EMG, video analysis and ground reaction forces.
8. Pathomechanics of movement of the upper extremity
9. Pathomechanics of movement of the lower extremity
10. Orthotics: basic biomechanics and their use in clinical practice.

**Learning Activities and Teaching Methods:**

Class lectures, class debates, practical sessions in physio labs, case studies

**Assessment Methods:**

Class participation, mini projects, mid-term exams, final exams.

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
The Identification and Treatment of Gait Problems in Cerebral Palsy	James R. Gage, Michael H. Schwartz, Steven E. Koop, Tom F. Novacheck	John Wiley & Sons	2009	9781898683650
Whittle's Gait Analysis, 5th Ed.	D. Levine, J. Richards, M.W. Whittle	Churchill Livingstone	2012	9780702042652

**Recommended Textbooks / Readings:**

<b>Title</b>	<b>Author(s)</b>	<b>Publisher</b>	<b>Year</b>	<b>ISBN</b>
Basic Orthopaedic Sciences: The Stanmore Guide.	Ramachandran M	Hodder Arnold	2006	9780340885024
Review of Orthopaedics	Miller MD	Elsevier	2012	9781455737383

## Course Syllabus MPTY-554 Neuromuscular Pathology and Diagnosis

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-554	Neuromuscular Pathology and Diagnosis	10
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
None	Life and Health Sciences	3 <sup>o</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Elective	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> Cycle	Dr. Antreas Roushias Dr. Christina Michailidou	2 <sup>o</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Face to face	No	None

### Course Objectives:

The main objectives of the course are to:

- Deepen into the presentation of characteristic anatomical structures of the nervous and musculoskeletal systems with detailed reports regarding their organization and structure.
- Critically evaluate the localization of the most important structures and identify the anatomical landmarks for each area and their importance in identification of pathologies and their differentiation from physiological.
- Be fully aware of the anatomy of Central (CNS) and Peripheral Nervous Systems (PNS) with extensive reports in the development and structure of the brain and the spinal cord. The study of the cooperation between peripheral nerves and skeletal muscle system will give the theoretical knowledge for understanding the control of voluntary movement
- Obtain the scientific knowledge and critical thinking for understanding the typical behavior of the nervous and musculoskeletal systems and to explain the underlying pathophysiological mechanisms in different musculoskeletal and neurological pathologies

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. Identify basic anatomical structures of the musculoskeletal system
2. Describe, locate, and palpate basic musculoskeletal structures

3. Critically evaluate the organization and functional differentiation of neuromusculoskeletal structures in order to interpret the function of voluntary movement
4. Discuss the clinical picture and pathophysiology of the degenerations in nervous and musculoskeletal systems
5. Debate about the pathophysiology and the aggravating mechanisms of different functional and established deformities
6. present a comprehensive understanding of the basic anatomical structures of the extremities and spine
7. Critically explain the basic pathologoanatomical and pathophysiological mechanisms in the most important diseases of the extremities and spine
8. Develop a deep understanding about the basic anatomical structures of the nervous system and present updated knowledge of their pathologies
9. Understand the connection between different areas of the central CNS and Peripheral nervous system (PNS)
10. Understand and interpret traumatic situations and degenerative diseases of CNS (upper motor neuron injuries, basic ganglia degenerative diseases, cerebellum system pathologies) that occur to the developing brain and through the lifespan

#### **Course Content:**

1. Anatomy and Pathology of lower extremity's musculoskeletal system
2. Anatomy and Pathology of upper extremity's musculoskeletal system
3. Anatomy and Pathology of spine's musculoskeletal system
4. Joint degenerative diseases
5. Tendons degenerative diseases
6. Aging of the musculoskeletal system
7. Introduction, organization of the nervous system, functional separation of CNS structures: cortex, hemispheres, lobes, basal ganglia, cerebellum
8. System and circuits of basal ganglia and pathological syndromes after their injury
9. Cerebellum system and pathological syndromes after injury
10. Brain stem and cerebral nerve nuclei and their pathology
11. Spinal cord ascending and descending bundles, spinal cord neuronic circuits, movement control in the level of spinal cord and their pathology
12. Peripheral Nervous system: brain conjugations and spinal nerves and their pathology

#### **Learning Activities and Teaching Methods:**

Lectures with specialized slides, case studies, laboratory demonstrations, self study with written essays.

**Assessment Methods:**

Interesting-participation-presence to the lectures, essays, tests, intermediate exams, final exams
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**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
Clinical Neuroanatomy & Neurosciences (Greek Version)	FitzGerland T, Gruener G & Mtui E.	Paschalides	2009	960-399-842-7

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
The human brain an introduction to functional anatomy	Nolte John	Mosby Elsevier	2009	9780323041317
Joint Structure and Function: A comprehensive Analysis, 5th ed.	Levangie and Norkin	Davis	2011	9780803623620
Principles of Neural Science, 5th ed.	Kandel ER, Schwartz JH, Jessell TM	McGraw-Hill	2013	9780071390118
Essential Neuroscience	Siegel A., Sapru H.	Lippincott Williams & Wilkins	2006	9780781750776
Kinesiology of the Musculoskeletal System: Foundations for Rehabilitation, 3rd ed.	Donald A. Neumann	Mosby	2016	9780323287531



## Course Syllabus MPTY-590 Research Thesis

<b>Course Code</b>	<b>Course Title</b>	<b>ECTS Credits</b>
MPTY-590	Research Thesis	20
<b>Prerequisites</b>	<b>Department</b>	<b>Semester</b>
MPTY-501, MPTY-502	Life and Health Sciences	3 <sup>rd</sup>
<b>Type of Course</b>	<b>Field</b>	<b>Language of Instruction</b>
Elective	Clinical Rehabilitation	Greek
<b>Level of Course</b>	<b>Lecturer(s)</b>	<b>Year of Study</b>
2 <sup>nd</sup> cycle	Supervisor	2 <sup>nd</sup>
<b>Mode of Delivery</b>	<b>Work Placement</b>	<b>Corequisites</b>
Research study	No	None

### Course Objectives:

The main objectives of the course are to:

- Teach the student to write a complete text in scientific language and structure and to present orally using multimedia at the same time his views on a subject of his / her specialty.
- To encourage and practice the student's critical thinking in the reading and synthesis of modern literature and to conduct an original research study.
- To teach the student at a practical level the process of a research work from the design stage, to the stage of implementation and finally to the analysis and presentation of the results.
- The research thesis may take the form of a systematic review, research protocol, clinical research or case study.

### Learning Outcomes:

After completion of the course students are expected to be able to:

1. They refer to the primary sources of knowledge and choose the relevant topics
2. They critically evaluate the credibility and validity of these sources
3. They synthesize in a scientifically structured way elements from primary sources for him
4. rational reasoning
5. They draw up a scientific text following the instructions of the work guide on its structure and form
6. They use the Harvard system to quote bibliographic references
7. They recognize the importance of copyright and avoid the possibility of plagiarism
8. They apply practical knowledge of the courses "Research Methodology in Health Sciences" and "Biostatistics"
9. They manage their time appropriately to keep the timetables set by their supervisor professor
10. They plan and implement a research project
11. They analyze the results of his research work and draw up appropriate reports (articles, presentations, etc.) for the publication of his conclusions

**Course Content:**

1. Searching for primary sources and exploiting them
2. Structure, sections of a dissertation
3. Design and proposal of a research protocol
4. Choice of instruments and methods for implementing a research protocol
5. Short and long term milestones for a survey and timetable
6. Technical implementation of a research project
7. Ensuring financial assistance
8. Bibliographic references to text and syntax of bibliography references
9. Copyright, plagiarism rules

**Learning Activities and Teaching Methods:**

Personal work in the library or in the workshops (in research work) under the guidance and support of the supervising professor.

**Assessment Methods:**

Written Work, Presentation, Publication

**Required Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
How to write a graduate and master thesis ( <i>Greek Textbook</i> )	Michael-Theodoros Marinos	Sakkoulas	2009	9789604204250
Guide for writing the research thesis: graduate or master ( <i>Greek Textbook</i> )	Andreadakis NS., Bamvoukas MI.	Atrapos	2005	960-6622-42-8

**Recommended Textbooks / Readings:**

Title	Author(s)	Publisher	Year	ISBN
The Longman Handbook for Writers and Readers	Anson C.M. and Schwegler R.A.	Longman	2003	9780321097248