**ACADEMIC DISCIPLINE OVERVIEW**

1. **Program data**

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| **1.1.** | **GRIGORE T. POPA UNIVERSITY OF MEDICINE AND PHARMACY IASI** |
| **1.2.**  | **FACULTY OF MEDICAL BIOENGINEERING**  |
| **1.3.** | **PROGRAMME:** Physio-kinetotherapy and rehabilitation |
| **1.4.**  | **STUDY FIELD:** Health |
| **1.5.** | **STUDY CYCLE**: UNDERGRADUATE |
| **1.6.** | **STUDY PROGRAMME:** INENGLISH |
| 1. **Subject data**
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| **2.1.** | **Subject: Neuro-cognitive rehabilitation techniques** RE 1311 |
| **2.2.** | **Module leader: Conf. dr. Dan Zaharia** |
| **2.3.** | **Seminar leader: As dr. Cătălina Luca** |
| **2.4. Year of study** | **3** | **2.5. Semester in which is taught** | **2** | **2.6. Evaluation type** | Exam | **2.7. Subject status** | Mandatory  |

1. **Estimated total time (hours/semester of didactic activity)**

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| **3.1.Number of hours / week** | 2 | **3.2. Courses number of hours / week** | 1 | **3.3.Seminar / l practical classes** | 1 |
| **3.4. Total number of learning hours** | 28 | **3.5. Courses** | 14 | **3.6. Seminar / practical classes** | 14 |
| **3.7. Distribution of the available time** | Hours |
| **Study based on the manual, lecture support, bibliography and hand notes** | 15 |
| **Supplementary documentation in the library, using specialised platforms via internet and by field work** | 16 |
| **Preparation for seminars / practical classes, study themes, reviews, portofolio, and essays** | 14 |
| **Tutorship** |  |
| **Examinations** | 2 |
| **Other activities** |  |
| **3.8. Total hours of individual study** | 47 |
| **3.9. Total hours pes semester** | 75 |
| **3.10. Number of credits** | 3 |

1. **Preconditions (where applicable)**

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| **4.1.** of curriculum | Anatomy, Physiology, Physics, Biochemistry, exploration and evaluation methods in medical rehabilitation, recovery Biomedical Instrumentation |
| **4.2.** of competences | Knowledge of the concepts, theories and fundamental concepts of physiological and pathological mechanisms of the body, symptoms and clinical signs. The ability to use biomedical instrumentation for recovery |

1. **Conditions (where applicable)**

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| **5.1.** for lectures | Logistic support video |
| **5.2.** for seminars / practical classes | Students will wear protective clothing (lab coat) |

1. **Specific competences acquired**

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| Professional competences (expressed as knowledge and abilities) | C6.1 Critical interpretation of functional assessment scores and quality of life constantly updated according to international standardsC6.2 Creating and facilitating the design of new devices and checking the functionality of joints. Description of the underlying methodology of scientific research |
| Transverse competences (of role, of professional development, personal) |  |

1. **Objectives of the study discipline (according to the grid of specific competences acquired)**

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| **7.1.** General objective | Knowledge, by students in medical education opportunities, methodology and limits rehabilitative medicine, given that it can be a useful tool for rehabilitation of functional deficits and organic. |
| **7.2.** Specific objectives | Acquisition of knowledge necessary for the integration of molecular-level cell, tissue, organ level, for understanding the functioning of the locomotor system and its interaction with other systems - Accumulation of notions on the different types of receptors, neurotransmitters, cytokines, to substantiate modern multiple physiological mechanisms involved in muscle contraction and their relation to skeletal elements. |

1. **Contents**

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| **8.1. Lecture** | **Teaching methods** | **Observations** |
| Defining the objectives, methodology medical rehabilitation. | Interactive lectures,Discussion, Explanations | 2 hours |
| The role of the physical therapist in the rehabilitation of functional, cognitive, occupational, social, family. | Interactive lectures,Discussion, Explanations | 2 hours |
| Rehabilitation of neuromuscular system. Techniques for rehabilitation of posture and gait. Using non-invasive monitoring techniques tone and muscle strength during locomotor recovery procedures. | Interactive lectures,Discussion, Explanations | 2 hours |
| Noninvasive techniques for rehabilitation central and peripheral nervous system. | Interactive lectures,Discussion, Explanations | 2 hours |
| Invasive techniques for rehabilitation central and peripheral nervous system. | Interactive lectures,Discussion, Explanations | 2 hours |
| Cognitive rehabilitation.  | Interactive lectures,Discussion, Explanations | 2 hours |
| Rehabilitative interventions, patient adaptation to physical dysfunction, patient quality of life.The role of multidisciplinary rehabilitation team physiotherapist. | Interactive lectures,Discussion, Explanations | 2 hours |
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| **8.2. Seminar / practical classes** | **Teaching methods** | **Observations** |
| Defining concepts of recovery / rehabilitation and medical terms infirmity, disability, handicap, disability. Defining the objectives, methodology of medical rehabilitation. Stages, team medical recovery.The role of the physical therapist in rehabilitation care. | Interactive lectures, Demonstrations, Experiments results analysis | 2 hours |
| The modern definition of recovery, the concept of 'problem-solving' quality of life, rehabilitative interventions. Individual dysfunction physical reactions, reactions that society from physical dysfunction, adaptation to physical dysfunction. | Interactive lectures, Demonstrations, Experiments results analysis | 2 hours |
| Defining biomechanical locomotion methods and techniques for assessing the functional deficit. Techniques for rehabilitation of posture and gait. | Interactive lectures, Demonstrations, Experiments results analysis | 2 hours |
| Using non-invasive monitoring techniques tone and muscle strength during locomotor recovery procedures. Functional electric stimulation (FES) peripheral and central. | Interactive lectures, Demonstrations, Experiments results analysis | 2 hours |
| Functional rehabilitation, cognitive, professional, social, family. Rehabilitation of children with malformations / degenerative diseases of the nervous system | Interactive lectures, Demonstrations, Experiments results analysis | 2 hours |
| The role of the physical therapist in the rehabilitation of head trauma / spine, stroke, Parkinson's disease. | Interactive lectures | 2 hours |
| The role of the physical therapist in the rehabilitation of dementias, demyelinating diseases, epilepsy, neuro-vegetative disorders. Using stem cells in neurological inpatient rehabilitation. | Interactive lectures, Demonstrations, Experiments results analysis | 2 hours |
| **Bibliography****mandatory**1. 1J.C. Bronzino – *The Biomedical Engineering Handbook ,* Springer and IEEE Press , 2000

**selective**1. F.Dyro – Clinical Engineering Handbook, Academic Press, 2004
2. G. Zouridakis- Biomedical technology and Devices, CRC Press, 2004
3. R. Cooper et all- An introduction to rehabilitation engineering, Taylor and Francis
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1. **Correlation of the discipline contents with the expectations of the epistemic community, professional associations, and representative employers from the afferent program field**

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| Knowledge and abilities are established as didactic objectives and specified as such in the analytic programs that are revised yearly. After their analysis by the study discipline staff, these are discussed and approved in the Curricular Committee, towards curricular harmonization among the various study disciplines. Along this entire process systematic evaluation is performed, directly if possible, regarding the correspondence of the contents to the expectations of the academic community and of the representatives of the social community, professional associations, and employers. |

1. **Evaluation**

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| **Type of activity** | **Type of activity** | **Evaluation methods** | **Contribution to the final grade** |
| **Lecture** | Acquiring the concepts and theoretical information presented in the course | Written exam | 50% |
| **Seminar/practical classes** |  | Activity during the year | 10% |
| Theme for practical works | Test for practical activity | 40% |
| **Minimal performance standard:** Knowledge of non-invasive techniques for monitoring the tone and muscle strength during locomotor recovery procedures. General notions on the rehabilitation of the central nervous system. |

**Date of completion: Signature of head of discipline**

Associate Professor Zaharia Dan

20.01.2017

**Department approval date**

30.01.2017

 **Signature of department director**

Lecturer Daniela-Viorelia Matei, Ph-D