**ACADEMIC DISCIPLINE OVERVIEW**

1. **Program data**

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| 1.1. Higher education institution | Grigore T. Popa University of Medicine and Pharmacy Iasi |
| 1.2. Faculty | Medical Bioengineering |
| 1.3. Department | Biomedical Sciences |
| 1.4. Field of study | Health |
| 1.5. The cycle of studies | Bachelor |
| 1.6. Study program / qualification | Balneo-physiokinetotherapy and rehabilitation – english language / Physiokinetotherapist |

**2. Discipline data**

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| 2.1. Name of the discipline / Code | | | | **Osteoarticular and Muscle Assessment** | | **RE1116** |
| 2.2. Teaching staff in charge with lectures | | | | **Lecturer Ilie Onu, PhD** | | |
| 2.3. Teaching staff in charge with practical activities | | | | **Lecturer Ilie Onu, PhD** | | |
| 2.4. Year of study | **I** | 2.5. Semester | **2** | 2.6. The type of assessment | **Exam, E2** | |
| 2.7. Discipline type | | **Mandatory** | | **Specialty discipline** | | |

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

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| 3.1. Number of hours / week: | | 3.2. Courses number of hours / week | | 3.3. Seminars / practical classes  number of hours / week | | | |
| Semester 1 |  |  | |  | | | |
| Semester 2 | **2** | **1** | | **1** | | | |
| 3.4. Total number of learning hours: | **28** | 3.5. Of which: Courses | **14** | 3.6. Of which: Seminars / practical classes: | | | **14** |
| 3.7. Distribution of individual study time: | | | | | Hours sem. 1 | Hours sem. 2 | |
| Study time using course book materials, bibliography and hand notes | | | | |  | 5 | |
| Supplementary documentation in the library, using specialised platforms via internet and by field work | | | | |  | 5 | |
| Preparation time for seminars / practical classes, study themes, reviews, portfolio and essays | | | | |  | 6 | |
| Tutorship | | | | |  | 4 | |
| Examinations | | | | |  | 4 | |
| Other activities | | | | |  | 6 | |
| Total hours of individual study (*without examinations*) | | | | |  | **22** | |
| 3.8. Total hours per semester | | | | |  | **50** | |
| 3.9. Number of credits | | | | |  | **2** | |

**4. Preconditions (where applicable)**

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| 4.1. of curriculum | Anatomy, Physiology, Physiopathology |
| 4.2. of competences | Knowledge of the anatomy, physiological and pathological mechanisms at the level of the locomotor, cardiovascular, respiratory, nervous and internal environment systems |

5. **Conditions (where applicable)**

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| 5.1. for lectures | Video logistics support |
| 5.2. for seminars / practical classes | Students will wear protective equipment (white coats) |

**6. Specific competences acquired**

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| **Professional competencies** | **C 5.1** | Description of concepts, theories and basic notions of joint and muscle functional assessment, functional assessment scores and assessment of the quality of life of patients with disabilities, identification of physical therapy methods and techniques |
| **C 6.3** | The application of medical devices to facilitate, advising the patient on the required activities |

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

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| 7.1. General objective | Evaluation of joint amplitudes and muscle testing techniques |
| 7.2. Specific objectives | Musculoskeletal assessment: assessing the physical growth and development through subjective methods and objective assessment of range of motion and strength muscle and gait assessment. Facilitate collaboration between specialist in physical therapy and other specialists to achieve results consistent with clinical observation for monitoring rehabilitation. |

**8. Contents**

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| **8.1. Lectures** | | **Teaching methods** | **Observations** |
| 1 | Basics musculoskeletal assessment. Specific parameters for evaluating performance and degree of recovery of locomotor performance. Anthropometry and somatoscopic assessment.  Active, passive movements. Segmental force. Evaluation of range of motion. Goniometry. Principles of manual muscle testing: Manual assessment of muscle strength. Gradation. The antigravity and gravity-free position. | Interactive lecture, discussions, explanations | 2 hours |
| 2 | Shoulder and Neck Evaluation **-** Articulations and Movements, Range of Motion Assessment and Measurement. Muscle Length Assessment and Measurement. Muscle Strength Assessment | Interactive lecture, discussions, explanations | 2 hours |
| 3 | Elbow and Forearm-Articulations and Movements. Range of Motion Assessment and Measurement. Muscle Length Assessment and Measurement. Muscle Strength Assessment | Interactive lecture, discussions, explanations | 2 hours |
| 4 | Wrist and Hand - Articulations and Movements. Range of Motion Muscle Strength Assessment | Interactive lecture, discussions, explanations | 2 hours |
| 5 | Hip**-** Articulations and Movements. Range of Motion. Muscle Length Assessment and Measurement | Interactive lecture, discussions, explanations | 2 hours |
| 6 | Knee. Ankle evaluation- Articulations and Movements. Range of Motion Assessment and Measurement. Muscle Length Assessment and Measurement . Muscle Strength Assessment | Interactive lecture, discussions, explanations | 2 hours |
| 7 | Lower Back Evaluation  Using non-invasive techniques for monitoring tone and muscle strength (tonometry, dynamometry)  Analysis of normal gait.  Pathological types of walking. | Interactive lecture, discussions, explanations | 2 hours |

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| **8.2. Practical activities - practical class** | | **Teaching methods** | **Observations** |
| 1 | General and segmental somatoscopy: subjective and instrumental examination. Physical development indices. | Practical demonstration,  Interactive discussions | 2 hours |
| 2 | Evaluation of the spine: Cervical spine: flexion, extension, lateral flexion, rotation; Thoraco-lumbar spine: flexion, extension, lateral flexion, rotation; Lumbar spine: flexion, extension, lateral flexion. Goniometric evaluation of the scapulohumeral belt: flexion, extension, abduction, adduction, internal rotation, external rotation. | Practical demonstration,  Interactive discussions | 2 hours |
| 3 | Goniometric assessment of the elbow and forearm: flexion, extension, forearm pronation, forearm supination. Goniometric evaluation of the hand joint and hand: hand flexion, hand extension, radial deviation of the hand, ulnar deviation of the hand. Flexion, abduction, adduction, metacarpophalangeal extension. Flexion, extension of the proximal, distal interphalangeal joint. Police flexion, extension, carpo-metacarpal adduction. | Practical demonstration,  Interactive discussions | 2 hours |
| 4 | Goniometric evaluation of the hip: flexion, extension, abduction, adduction, internal rotation and external rotation. Goniometric evaluation of the knee. Goniometric assessment of the ankle and foot: dorsiflexion, plantarflexion, inversion, eversion. Flexion of the metatarsophalangeal joint. Extension of the metatarsophalangeal joint. Abduction of the metatarsophalangeal joint. | Practical demonstration,  Interactive discussions | 2 hours |
| 5 | Principles of manual muscle testing: Manual assessment of muscle strength. Gradation. The antigravity and gravity-free position. The muscular balance of the cervical spine: flexion, extension, lateral flexion and rotation. Muscular balance of the trunk: flexion, extension, lateral flexion and rotation. The muscular balance of the lumbar spine: flexion, extension, lateral flexion and rotation. | Practical demonstration,  Interactive discussions | 2 hours |
| 6 | Muscular balance of the shoulder: flexion, extension, abduction, adduction, internal rotation, external rotation, anteduction, retroduction, elevation and descent. Muscular balance of the elbow and forearm: elbow flexion, elbow extension, supination and pronation. Muscular balance of the hand and fist: flexion of the fingers, extension of the fingers, flexion of the wrist, extension of the wrist, abduction and adduction of the wrist, flexion of the fist, extension of the fist, radial deviation and ulnar deviation of the fist. | Practical demonstration,  Interactive discussions | 2 hours |
| 7 | Muscular balance of the hip: flexion, extension, abduction, adduction, internal rotation, external rotation. Muscular balance of the knee: flexion and extension. Muscle balance of the leg: dorsiflexion, plantar flexion, inversion, eversion, | Practical demonstration,  Interactive discussions | 2 hours |

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| **8.3. Bibliography:** |
| ***Mandatory:*** |
| 1. Course materials and practical works posted on the e-learning platform of UMF "Grigore T Popa" Iasi  2. Sardaru D, Onu I, Matei D. Evaluarea amplitudinilor articulare, Ed Gr T. Popa, Iasi 2021.  3. Hazel Clarkson. Musculoskeletal Assessment: Joint Range of Motion, Muscle Testing, and Function (Lippincott Connect) 4th Edition, ‎ Wolters Kluwer Health. July 20, 2020, ISBN ‏ : ‎ 1975152409  4. Cynthia C Norkin, D Joyce White . Measurement Of Joint Motion: A Guide To Goniometry. 5th ed. Philadelphia, Devis Company, 2016. |
| ***Elective:*** |
| 1. Muscolino Joseph E. Kinesiology. The skeletal system and muscle function**.** 2nd ed. Missouri, Elsevier, 2011.  2. Popescu CD, Constantinescu A, Ignat EB, Matei D, Alexa D, Bolboceanu O, Grosu C, Popescu D. Neurology for medical students. Second edition. Eds CD Popecu. editura « Gr. T. popa », ISBN: 978-606-544-288-7, 2015  3. Magee, David J. Orthopedic physical assessment 6th edition. Saunders, an imprint of Elsevier Inc. 2014. ISBN 978-1-4557-0977-9  4. Ana Stratone, Florin Topoliceanu, Florin Filip, Ciofea R, Zaharia Dan, Ciorap R, Matei Daniela - Function Testing Handbook – A practical guide for foreign students, Ed PIM, 2006, ISBN 973-716-316-8; 254 pagini |

**9. *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. |

**10. Evaluation**

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| Type of activity | Assessment criteria | Evaluation methods | Contribution to the final grade |
| Lectures | Acquiring theoretical notions and presented in the course | Written exam.  MCQ Examination | 80 % |
| Practical activities | Activities carried out in laboratory and conducted quality essays. | Colloquium practical activity | Admitted/ Rejected |
| Individual study | Preparation time for seminars / practical classes, study themes, reviews, portfolio and essays.  Study time using coursebook materials, bibliography and hand notes, documentation in the library, using specialised platforms via internet and by field work. | Tests during the semester | 20 % |
| Minimal performance standard:   * Knowing the basic notions of goniometry and manual muscle testing | | | |

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| Date | Holder of course / signature, | Holder of practical activities / signature, |
| 11.09.2024 |  |  |

Lecturer Ilie Onu, PhD Lecturer Ilie Onu, PhD

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| Date of approval in the Department Council/Teaching Council, | | |
| 19.09.2024 |  | Department director / signature, |
|  |  | Associate Professor Daniela Viorelia Matei, MD, PhD |