

## BSc in Physiotherapy

**INTEGRATED COURSE TITLE:**  
**NUMBER OF ECTS CREDITS: 6**  
**SSD: MED/48**

**MODULE CONVENOR:** [Giovanni Galeoto](#)  
**PROFESSOR:** [Loredana Gigli](#)  
**PROFESSOR:** [Marco Gallotti](#)

### REHABILITATION METHODOLOGY I

**E-MAIL:** [giovanni.galeoto@unicamillus.org](mailto:giovanni.galeoto@unicamillus.org)  
e-mail: [loredana.gigli@unicamillus.org](mailto:loredana.gigli@unicamillus.org)  
e-mail: [marco.gallotti@unicamillus.org](mailto:marco.gallotti@unicamillus.org)

### PREREQUISITES

Mandatory preparatory knowledges are not required, however knowledge about anatomy and neuroanatomy, physiology and neurophysiology and basic concepts of Physics and applied physics are required. are necessary.

### LEARNING OBJECTIVES

**General Objective:** The student will have to acquire general knowledge on the significance of functional evaluation, the methodological approach of rehabilitation, on the subjects participating in it, and on the general techniques of handling and mobilizing Patient.

**Specific objectives:** Through a deepening of the joint physiology, the muscular tests and the techniques of mobilization and handling of loads, the student will be able to acquire the foundations to undertake the practical training course.

### LEARNING OUTCOMES

#### Knowledge and understanding

- At the end of the course the student is required to know:
- the basic anatomical terminology and basic anatomical structures of the human body (locomotor apparatus)
- organization and basic structure of the central and peripheral nervous system
- Acquire specific knowledge on biomechanics and joint physiology as an analysis and guidance system for function assessment
- Acquire specific knowledge on the neurophysiological mechanisms of manual muscle test functioning
- Learn the main tests of muscle and joint examination and their correct execution
- Learn the evaluation method of the Manual Muscle Test

#### Applying knowledge and understanding

At the end of the course the student will be able to:

Use the acquired knowledge of human anatomy and neuroanatomy for the functional assessment of the healthy person.

#### Communication skills

At the end of the course the student must know adequately human anatomical structures, muscle and joint tests, joint physiology and biomechanics and knowing how to use specific anatomical terminology so as to be able to relate, within the care process, with users of all ages and / or other health professionals, in an appropriate verbal, non-verbal and written form.

### **Making judgements**

The knowledge of biomechanics, joint and muscle physiology will help the physiotherapist to develop a critical thinking in the ability to decide the correct answer to the needs of assistance in relation to the different levels of complexity of the rehabilitation intervention.

### **Learning Skills**

The student will have acquired skills and learning methods suitable for deepening and improving their knowledge and skills in the field of rehabilitation sciences, also through consultation of scientific literature.

### **SYLLABUS**

#### **BIOMECHANICS PROGRAM**

- ❑ Articular physiology of the pelvis and the lower limb
- ❑ The pelvis: articular surfaces; Physiology of movements; Ligaments and muscular actions
- ❑ Hip: articular surfaces; Physiology of movements; Ligaments and muscular actions
- ❑ The knee: articular surfaces; Physiology of movements; Ligaments and muscular actions
- ❑ The ankle: articular surfaces; Physiology of movements; Ligaments and muscular actions
- ❑ Foot: articular surfaces; Physiology of movements; Ligaments and muscular actions

The PLANTAR Vault: Functions of the Vault; Inner Arch; Outer arc; Front arch; transverse and longitudinal curvature; Muscles that support the plantar vault; Carrying of the foot to the ground during the pass.

Articular physiology of the shoulder and upper extremity

#### **SECTION I**

- ❑ Principles and Methods
- ❑ Joint Range of Motion
- ❑ Assessment and Measurement of Joint Range of Motion
- ❑ Assessment and Measurement of Muscle Length
- ❑ Manual Assessment of Muscle Strength
- ❑ Functional Application of Assessment of Joint
- ❑ Range of Motion and Manual Muscle Testing
- ❑ Relating Assessment to Treatment
- ❑ Similar Assessment and Treatment
- ❑ Methods
- ❑ Key Steps When Applying Assessments and Treatments
- ❑ Examples of Similar Assessment and Treatment Methods

#### **SECTION II**

- ❑ Regional Evaluation
- ❑ Techniques

### **Shoulder Complex**

- ❑ Articulations and Movements
- ❑ Surface Anatomy



- ❑ Range of Motion Assessment and Measurement
- ❑ Muscle Length Assessment and Measurement
- ❑ Muscle Strength Assessment
- ❑ Functional Application
- ❑ Osteocinematic movements of the shoulder complex

### **Elbow and Forearm**

- ❑ Articulations and Movements
- ❑ Surface Anatomy
- ❑ Range of Motion Assessment and Measurement
- ❑ Muscle Length Assessment and Measurement
- ❑ Muscle Strength Assessment
- ❑ Functional Application
- ❑ Osteocinematic movements of the elbow

### **Wrist and Hand**

- ❑ Articulations and Movements
- ❑ Surface Anatomy
- ❑ Osteocinematic movements of the wrist and fingers
- ❑ Range of Motion Assessment and Measurement
- ❑ Muscle Length Assessment and Measurement
- ❑ Muscle Strength Assessment
- ❑ Functional Application

### **Hip**

- ❑ Articulations and Movements
- ❑ Surface Anatomy
- ❑ Range of Motion Assessment and Measurement
- ❑ Muscle Length Assessment and Measurement
- ❑ Muscle Strength Assessment
- ❑ Functional Application

### **Knee**

- ❑ Articulations and Movements
- ❑ Surface Anatomy
- ❑ Range of Motion Assessment and Measurement
- ❑ Muscle Length Assessment and Measurement
- ❑ Muscle Strength Assessment
- ❑ Functional Application

### **Ankle and Foot**

- ❑ Articulations and Movements
- ❑ Surface Anatomy
- ❑ Range of Motion Assessment and Measurement
- ❑ Muscle Length Assessment and Measurement
- ❑ Muscle Strength Assessment
- ❑ Functional Application

### **Head, Neck, and Trunk**

- ❑ Articulations and Movements: Head and Neck
- ❑ Instrumentation and Measurement Procedures: TMJ and Neck
- ❑ Active Range of Motion Assessment and Measurement: Head and Neck
- ❑ Validity and Reliability: Measurement of the TMJ and Cervical Spine AROM
- ❑ Muscle Strength Assessment: Muscles of the Face
- ❑ Muscle Strength Assessment: Muscles of the Head and Neck



- ❑ Articulations and Movements: Trunk
- ❑ Surface Anatomy: Trunk
- ❑ Active Range of Motion Assessment and Measurement: Trunk
- ❑ Validity and Reliability: Measurement of the Thoracic and Lumbar Spine AROM
- ❑ Muscle Length Assessment and Measurement: Trunk
- ❑ Muscle Strength Assessment: Muscles of the Trunk
- ❑ Functional Application: Neck and Trunk

### **COURSE STRUCTURE**

The teaching is organized in lectures (60 hours) and practical theoretical exercises. During the lessons, the explanation of articular Physiology and Biomechanics will be performed by projecting illustrative images (Power-Point) and video. During the exercises the students will be able to test the arctic and muscular tests on themselves simulating the function evaluation. In the classroom during the lessons the students will practice the mentioned tests in groups.

### **COURSE GRADE DETERMINATION**

The assessment of learning takes place on the basis of a written test and a theoretical-practical test.

The written test includes a questionnaire made up of 30 questions with five answer options. To access the oral exam the student must correctly answer 21 questions out of 30.

During the oral test the examining commission will evaluate the student's learning ability as well as the ability to apply knowledge. The following will also be assessed: independent judgment and communication skills. The final grade will be assigned by the Commission collegially. The final evaluation requires a pass in all three modules of the integrated course. Students cannot pass the exam if one of the modules is not sufficient. The following criteria will be adopted to assign the vote:

**18-20:** Just enough knowledge and understanding of topics, with obvious imperfections; just sufficient capacity for analysis, synthesis and independent judgement; poor ability to use technical language.

**21-23:** Sufficient knowledge and understanding of topics; sufficient capacity for analysis and synthesis with the ability to logically and coherently argue the required contents; sufficient ability to use technical language.

**24-26:** Fair knowledge and understanding of the topics; discrete capacity for analysis and synthesis with the ability to rigorously argue the required contents; Good ability to use technical language.

**27-29:** Good knowledge and understanding of required content; good capacity for analysis and synthesis with the ability to rigorously argue the required contents; good ability to use technical language.

**30-30L :** Excellent level of knowledge and understanding of the required contents with an excellent capacity for analysis and synthesis with the ability to argue the required contents in a rigorous, innovative and original way; Excellent ability to use technical language.

### **OPTIONAL ACTIVITIES**

Students will have the opportunity to carry out theoretical / practical exercises and participate in dedicated seminars. The teachers will provide constant support during and after the lessons. The Practice Laboratory is available to students for individual and group study.

## READING MATERIALS

Functional anatomy-upper limb-lower extremity-trunk and spine - Kapandji | Monduzzi

- ❑ MUSCULO-SKELETAL ASSESSMENT Joint Motion and Muscle Testing - Hazel M. Clarkson, M.A., B.P.T. 2013 LIPPINCOTT WILLIAMS & WILKINS
- ❑ Muscles: Testing and Function, with Posture and Pain: Testing and Function with Posture and Pain, (ENGLISH EDITION) Florence P. Kendall, Elizabeth Kendall McCreary Patricia G. Provance Mary Rodgers William Romani, LIPPINCOTT WILLIAMS & WILKINS
- ❑ Musculoskeletal Assessment: Joint Motion and Muscle Testing Spiral-bound – 17 Jan 2012 LIPPINCOTT WILLIAMS & WILKINS
- ❑ Physiology of the Joints 6th Edition Volume 2 Lower Limb ELSAVIER
- ❑ Muscles: Testing and Function, with Posture and Pain: Testing and Function with Posture and Pain, (ENGLISH EDITION) Florence P. Kendall, Elizabeth Kendall McCreary Patricia G. Provance Mary Rodgers William Romani, LIPPINCOTT Musculoskeletal Assessment: Joint Motion and Muscle Testing Spiral-bound – 17 Jan 2012 LIPPINCOTT WILLIAMS & WILKINS
- ❑ Physiology of the Joints 6th Edition Volume 2 Lower Limb ELSEVIER WILLIAMS & WILKINS
- ❑ Donald a. Neumann - Kinesiology of the Musculoskeletal System 3rd Edition-ELSEVIER (2018)
- ❑ Taylor A, Mourad F, Kerry R, Hutting N. A guide to cranial nerve testing for musculoskeletal clinicians. J Man Manip Ther. 2021 Dec;29(6):376-389. doi: 10.1080/10669817.2021.1937813. Epub 2021 Jun 29. PMID: 34182898; PMCID: PMC8725776.
- ❑ Damodaran O, Rizk E, Rodriguez J, et al. Cranial nerve assessment: a concise guide to clinical examination. Clin Anat. 2014;27(1):25–30.