



# UNIVERSITÀ DEGLI STUDI DI PALERMO

<b>DEPARTMENT</b>	Biomedicina, Neuroscienze e Diagnostica avanzata
<b>ACADEMIC YEAR</b>	2023/2024
<b>BACHELOR'S DEGREE (BSC)</b>	PHYSIOTHERAPY
<b>INTEGRATED COURSE</b>	SCIENCE OF MOVEMENT - INTEGRATED COURSE
<b>CODE</b>	15193
<b>MODULES</b>	Yes
<b>NUMBER OF MODULES</b>	2
<b>SCIENTIFIC SECTOR(S)</b>	MED/34, M-EDF/01
<b>HEAD PROFESSOR(S)</b>	LETIZIA MAURO GIULIA Professore Ordinario Univ. di PALERMO
<b>OTHER PROFESSOR(S)</b>	DI RAIMONDO Professore Associato Univ. di PALERMO DOMENICO LETIZIA MAURO GIULIA Professore Ordinario Univ. di PALERMO
<b>CREDITS</b>	9
<b>PROPAEDEUTICAL SUBJECTS</b>	
<b>MUTUALIZATION</b>	
<b>YEAR</b>	1
<b>TERM (SEMESTER)</b>	2° semester
<b>ATTENDANCE</b>	Mandatory
<b>EVALUATION</b>	Out of 30
<b>TEACHER OFFICE HOURS</b>	<b>DI RAIMONDO DOMENICO</b> Friday 12:00 14:00 <b>LETIZIA MAURO GIULIA</b> Monday 12:00 13:00 Biblioteca della Cattedra di Medicina Fisica e Riabilitativa

DOCENTE: Prof.ssa GIULIA LETIZIA MAURO

<b>PREREQUISITES</b>	The student must have adequate anatomical and physiological knowledge of the musculo-scheletic and neurological apparattes
<b>LEARNING OUTCOMES</b>	<p>The student must have anatomical and physiological good knowledge of the musculoskeletal and neurological systems. Furthermore, he / she will have to acquire the fundamental notions that allow to analyze the movement through the physiological and biomechanical principles and mechanisms, in the different areas. Will have to learn the basics of the subjects of the integrated course with the ability to use a specific language and rigorous reasoning. The student must clearly learn the acquired knowledge and have developed the learning skills that allow them to continue studying both the theoretical and practical part independently. musculoskeletal and nervous systems. Knowing biomechanics, learning and neuro-motor control for the acquisition of skills. To be able to carry out a functional evaluation and to know how to interpret morpho-functional anomalies. Knowing the notions of movement as a tool to improve AD as well as the health and well-being of healthy subjects or those affected by pathologies. Knowing how to define the physiology and mechanical alterations of all people, knowing how to act and the data provided by the functional evaluation in a functional way.</p> <p>He will have to acquire stable skills to interact appropriately with the patient, ndo an empathic communication; he will have to listen to understand and synthesize information, facilitating the understanding of patients and the family. He will also have to interact with the other professionals of the rehabilitation team.</p> <p>The student must acquire refresher skills through the use of continuous scientific publications and participate in refresher courses, necessary to undertake subsequent studies.</p>
<b>ASSESSMENT METHODS</b>	<p>Oral test- Grade out of thirty The examination is performed through the two or thrrre questions regarding the topic developed during the lessons Excellent 30-30 laude excellent knowledge of the topics, excellent properties of language, good analytical ability, the student is able to apply knowledge to solve problems proposed</p> <p>very good 26-29 Good mastery of the subjects, full ownership of the language, the student is able to apply knowledge to solve problems proposed</p> <p>good 24-25 Basic knowledge of the main topics, discrete properties of language, with limited ability to independently apply the knowledge to the solution of the proposed problems</p> <p>satisfactory 21-23 He does not have full command of the main teaching subjects but it has the knowledge, satisfactory property language, poor ability to independently apply the knowledge acquired</p> <p>sufficient 18-20 minimum basic knowledge of the main teaching and technical language issues, very little or no ability to independently apply the knowledge acquired</p> <p>Insufficient does not have an acceptable knowledge of the contents of the topics</p>
<b>TEACHING METHODS</b>	Frontal lessons

**MODULE  
PHYSICAL ACTIVITY**

*Prof. DOMENICO DI RAIMONDO*

**SUGGESTED BIBLIOGRAPHY**

- Cinesologia: Il movimento umano – Vincenzo Pirola – Edi Ermes
- Attività fisica per la salute – Pasqualina Buono – Edi Ermes
- Apprendimento motorio: concetti ed applicazioni - Bortoli e Robazza – Edizioni Luigi Pozzi
- Articoli dalla letteratura scientifica
- Appunti dalle lezioni

<b>AMBIT</b>	10326-Scienze interdisciplinari
<b>INDIVIDUAL STUDY (Hrs)</b>	45
<b>COURSE ACTIVITY (Hrs)</b>	30

**EDUCATIONAL OBJECTIVES OF THE MODULE**

To provide the fundamental knowledge related to the terminology, the anatomical and physiological bases and the mechanisms that regulate the development of the motor activities, the biomechanics and the ability of the movement. To make to learn the principal theories and methodology of study of the human movement in a cognitive-behavioral perspective, underlying both neurological and biomechanic mechanisms aimed to the production of the movement, to the control of the voluntary movement and to the motor learning. To favor the understanding of the concept of adapted motor activity in its different aspects.

**SYLLABUS**

Hrs	Frontal teaching
2	anatomy and physiology applied to human movement
2	Brief description of the anatomy and physiology of the nervous system
2	Biomechanics of the locomotor system
2	Motory Units. Metabolic and strong handling during motor activity
1	Classifications of the human movement
1	Evolutionary steps of the motor development. Automatic postural reactions
2	Different types of movement (voluntary, automatic, automated, spinal reflexes, pathological movements). Models of study of the movement.
2	Motor control. Mechanisms of elaboration of the information in the execution of the movement (identification of the stimuli, selection and planning of the motor response). Control's systems open and closed-loop.
1	Theories and types of feedback. Mechanisms related to the correction of errors during movement execution
1	Motor program and parametrisation of the movement. Anticipatory movements
1	selection and planning of the motor response
1	Concepts of the motor learning. Stadiums and classifications of the motor learning. Development of the basal motor schemes.
1	Methodological aspects of motor learning (quantity of the practice, distribution, variability, organization and contextual interference, mental practice, practice for parts and global, transfer, strategy and metastrategy).
1	Application aspects of movement (standing position, demabulation, run, jump, kick, twrow)
2	The motor abilities
2	Motor qualities (Strength and test of measurement, Resistance, Rapidity, Agility, Dexterity, Equilibrium). Psychic qualities
1	General coordinate abilities. Special coordinate abilities
2	Training: technique and didactics. The training load. Motor reserve of adaptation.
3	Physical activity adapted for specific classes of subjects (elderly, diabetic, hypertensives, obese, etc.). Adaptations of tissues and organ after regular physical exercise

**MODULE  
PHYSICAL AND REHABILITATIVE MEDICINE**

*Prof.ssa GIULIA LETIZIA MAURO*

**SUGGESTED BIBLIOGRAPHY**

Cinesiologia: Il movimento umano – Vincenzo Pirola – Edi-Ermes Il senso del movimento – Berthoz A. – McGraw-Hill  
 Apprendimento motorio: concetti ed applicazioni –Bortoli e Robazza – Edizioni Luigi Pozzi –Articoli dalla letteratura scientifica

<b>AMBIT</b>	10329-Scienze della fisioterapia
<b>INDIVIDUAL STUDY (Hrs)</b>	90
<b>COURSE ACTIVITY (Hrs)</b>	60

**EDUCATIONAL OBJECTIVES OF THE MODULE**

The purpose of this course is to provide basic knowledge of terminology, concepts and principles that are fundamental in the development process of motor activities. To impart the foundations of theory and methodology of human movement in a cognitive-behavioral perspective, based on neurological and biomechanical processes fundamental for the construction of simple and complex movement, through neuromotor control.

**SYLLABUS**

Hrs	Frontal teaching
6	The shoulder •Shoulder physiology •Movements of the shoulder girdle •The three steps of adduction, forward roll and flexion •Muscles •Adduction and backward roll
3	The elbow: flexion-extended •Elbow physiology •Ligaments and muscles •Range and limitations of flexion-extended •Joint coaptation factors
3	The prono-supination •Definition •Physiological anatomy of proximal and distal radio-ulnar articulation •Muscles •Prono-supination mechanical disorders
3	The wrist •Articular complex and movements •Radiocarpal and midcarpal joints •Muscles
6	The hand •Architecture of the hand •Carpal bones •Palmar concavity •Metacarpophalangeal and Interphalangeal joints •Tendon pulleys and sheaths •Muscles •The trapeziometacarpal and metacarpophalangeal joints of the thumb •The opposition movement of the thumb •Way of grasping
3	The hip •Hip movements •Capsule and ligaments •Joint coaptation factors •Muscles •Inversions of some muscle actions
6	The knee •Knee physiology •Movements and muscles •Articular capsule and adipose ligaments and cruciate ligaments •Menisci •Collateral
3	The ankle • The physiology of the ankle joint • Movements • The ligaments of the ankle joint • The anteroposterior and trasversal stability • The peroneal-tibial joints
3	The foot • Subtalar and mid-tarsal articulation • Subtalar and mid-tarsal movements •Anterior tarsus and tarsal-metatarsal joints • The muscles and tendon sheaths • The sole of the foot
3	The plantar arch • Architecture of the plantar arch • The three arches of the plantar arch and deformation • Dynamics of the plantar arch of the foot during walking • Adaptation of the plantar arch to the ground • Distribution of static loads
3	The spine •The physiology of the spine •The movements and the intervertebral connecting elements •Structure of the intervertebral disc •Clinical evaluation of the overall range of spinal movements
3	The pelvic girdle and sacroiliac joints •The pelvic girdle •The sacroiliac joint •The ligaments of the sacroiliac •The nutation and counternutation •The symphysis sacrococcygeal symphysis
3	Lumbar spine •The lumbar spine •The ligament system •Movements and muscles •Lumbosacral spine •Statics of the lumbar spine in the standing position
6	Dorsal spine and breathing •Costovertebral joints •Movements and muscles •Chest deformities •Synergic/antagonistic relationship between diaphragm and abdominal muscles •Respiratory physiology

3	<p>Cervical spine •The cervical spine and its movements •The atlantoaxial and atlanto-occipital joints •The movements in the atlantoaxial, atlanto-odontoid and atlanto-occipital joints •Ligaments and muscles •</p> <p>Motor compensation of the sub-occipital spine •Balance of the head on the cervical spine</p> <p>•Relationships between spinal cord and cervical spine</p>
3	The step and the walking