# UNIVERSITÀ DEGLI STUDI DI PALERMO

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| **DEPARTMENT** | Biomedicina, Neuroscienze e Diagnostica avanzata |
| **ACADEMIC YEAR** | 2018/2019 |
| **BACHELOR'S DEGREE (BSC)** | PHYSIOTHERAPY |
| **SUBJECT** | PHYSIOLOGY |
| **TYPE OF EDUCATIONAL ACTIVITY** | A |
| **AMBIT** | 10319-Scienze biomediche |
| **CODE** | 84225 |
| **SCIENTIFIC SECTOR(S)** | BIO/09 |
| **HEAD PROFESSOR(S)** | DI LIBERTO VALENTINA Professore Associato Univ. di PALERMO |
| **OTHER PROFESSOR(S)** | |
| **CREDITS** | 4 |
| **INDIVIDUAL STUDY (Hrs)** | 60 |
| **COURSE ACTIVITY (Hrs)** | 40 |
| **PROPAEDEUTICAL SUBJECTS** | |
| **MUTUALIZATION** | |
| **YEAR** | 1 |
| **TERM (SEMESTER)** | 2° semester |
| **ATTENDANCE** | Mandatory |
| **EVALUATION** | Out of 30 |
| **TEACHER OFFICE HOURS** | **DI LIBERTO VALENTINA**<br>Monday 10:00 17:00 Istituto di fisiologia, Corso Tukory 129<br>Tuesday 10:00 17:00 Istituto di fisiologia, Corso Tukory 129<br>Wednesday 10:00 17:00 Istituto di fisiologia, Corso Tukory 129<br>Thursday 10:00 17:00 Istituto di fisiologia, Corso Tukory 129<br>Friday 10:00 17:00 Istituto di fisiologia, Corso Tukory 129 |

**DOCENTE:** Prof.ssa VALENTINA DI LIBERTO

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| **PREREQUISITES** | Basic knowledge of biophysics and biochemistry useful to the understanding of organ physiology. |
| **LEARNING OUTCOMES** | Knowledge and understanding<br>Acquire and understand the key concepts of human anatomy , histology , applied biology , genetics and physiology to have a integrate vision of human body functioning.<br>Applying knowledge and understanding<br>The student will develop the ability to integrate and use the knowledge acquired on human body anatomy and on biological and genetic mechanisms of several organs function. The student will be able to correlate the anatomical and functional aspects of the organs and systems that are the basis of physiological processes .<br>Evaluation autonomy<br>Students will be able to independently evaluate the implications of biology and genetics in the organization of tissue and organs and they functioning.<br>communication skills<br>Being able to listen and communicate clearly and concisely both with patients and with other professional people.<br>Learning ability<br>Being able to collect, organize and interpret correctly biomorphological information from various print and digital resources for continue to study independently and have a constant update of their knowledge. |
| **ASSESSMENT METHODS** | Oral examination<br>The oral examination will take place with the formulation of two or three general questions on the topics covered in the course and described in the teaching program. The test will evaluate the level of learning , the ability to integrate knowledge and the autonomy of opinions on the learned knowledge. It will also be evaluated the ability to clearly expose the learned topics and the property of language.<br>The assessment of the oral test is expressed in thirtieths following the scheme described in:<br>http://www.unipa.it/scuole/dimedicinaechirurgia |
| **EDUCATIONAL OBJECTIVES** | The objective of the module is to acquire basic knowledge of the main organs functioning of the human body . Knowing how<br>to think about the main adaptive responses and integrated control of various devices, with particular attention to the<br>integrated control between central nervous system and other organs .To know the functional organization of the nervous system, with particular attention to the motor and postural control, and the functional and adaptive aspects of skeletal muscle. |
| **TEACHING METHODS** | Frontal teaching. |
| **SUGGESTED BIBLIOGRAPHY** | D. U. Silverthorn, Fisiologia, V edizione, Casa Editrice Ambrosiana;<br>oppure<br>Rhoades e Pflanzer, Fisiologia generale ed umana Piccin; |

## SYLLABUS

| Hrs | Frontal teaching |
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| 2 | Neuronal electrical events : genesis and propagation of action potential |
| 4 | Synaptic transmission, release of neurotransmitters and their interaction with the different classes of receptors . Synaptic Plasticity, learning and memory. |
| 4 | Physiology of tactile and proprioceptive sensitivity , thermal and pain , visual and acoustic and cognitive processing in the brain cortex . cortical areas involved in language. Attention and consciousness. |
| 8 | Main characteristics of the motor system and its functioning in a motor action . Frontal lobe , the basal ganglia and cerebellum. Posture and balance . Anatomical and functional bases of sleep . |
| 3 | Main functional aspects of the limbic system : types of emotions, involved circuits and visceralmotor and behavioral reactions. Anatomical and functional aspects of spread neurochemical systems: cholinergic, noradrenergic, dopaminergic, serotonergic and histaminergic and their impact in the cortical, emotional and behavioral activities. Homeostatic functions of the hypothalamus . Hunger, thirst , heat regulation . |
| 4 | Heart functional elements . Excito-contraction and cardiac cycle . Cardiac output , and his nervous - humoral regulation . Electrocardiogram |
| 4 | Vascular system . Large and small circle , arterial pulse , blood pressure and his nervous and chemical control , function of capillaries . |
| 3 | Skeletal muscle excitation-contraction. Development of muscle strength. Trophy and muscular repair. |
| 4 | Respiratory functional elements. respiratory mechanics and lung volumes . gas and transport exchange O2 and CO2 . respiratory centers and regulation of breathing |
| 4 | functional elements of the kidney. glomerular ultrafiltration , reabsorption and tubular secretion . mechanisms of urine concentration. Clearance . Micturition reflex |