UNIVERSITÀ DEGLI STUDI DI PALERMO

DEPARTMENT	Biomedicina, Neuroscienze e Diagnostica avanzata
ACADEMIC YEAR	2020/2021
MASTER'S DEGREE (MSC)	NEUROSCIENCES
INTEGRATED COURSE	PSYCOBIOLOGY AND NEUROPHYSIOLOGY - INTEGRATED COURSE
CODE	21138
MODULES	Yes
NUMBER OF MODULES	2
SCIENTIFIC SECTOR(S)	BIO/09, M-PSI/02
HEAD PROFESSOR(S)	SARDO PIERANGELO Professore Ordinario Univ. di PALERMO
OTHER PROFESSOR(S)	OLIVERI MASSIMILIANO Professore Ordinario Univ. di PALERMO SARDO PIERANGELO Professore Ordinario Univ. di PALERMO
CREDITS	8
PROPAEDEUTICAL SUBJECTS	
MUTUALIZATION	
YEAR	1
TERM (SEMESTER)	1° semester
ATTENDANCE	Mandatory
EVALUATION	Out of 30
TEACHER OFFICE HOURS	**OLIVERI MASSIMILIANO** Friday 10:00 12:00 Stanza TEAMS con codice alx3rxb **SARDO PIERANGELO** Monday 09:30 10:30 BiND- Sezione di Fisiologia umana - Corso Tukory, 129 - II piano Friday 09:30 10:30 BiND- Sezione di Fisiologia umana - Corso Tukory, 129 - II piano

DOCENTE: Prof. PIERANGELO SARDO

PREREQUISITES	Robust knowledge of the anatomy of central and peripheral nervous system, as well as of biochemical processes underlying neural functions and communications.
LEARNING OUTCOMES	Knowledge and ability to understand the main functional aspects of neurophysiology and psychobiology, even including some specific advanced topics in the field. Making judgments Being able to formulate hypotheses, collect and critically evaluate data, in order to solve problems. Being able to formulate personal judgments to solve analytical and critical problems ("problem solving") and being able to independently search for scientific information. Ability to interact with other professionals in the field of Neuroscience through an efficient teamwork. Ability of applying the knowledge about of the main regulatory functional mechanisms of neural circuits, as well as their integrative actions in order to perform goal directed behaviours. Ability to collect and interpret data useful to inform judgments on basic aspects of the disciplines of the course. Ability to communicate information, ideas, problems and solutions related to the same disciplines. Development of learning skills useful to progress in studying further disciplines of the Degree Course.
ASSESSMENT METHODS	The student should answer at least three questions posed orally, about all arguments covered by the program of each teaching module, with reference to both the recommended books and the information provided during the lessons of the course. The final assessment aims to evaluate whether the student knows and understands the topics, as well as wheter he/she has interpretative ability about the normal structure, biochemistry and physiological functions and their parameters. The evaluation is expressed using a 30-point scale. ECTS grades: A – A+ Excellent (30-30 cum laude) - Grade descriptors : Excellent knowledge of teaching contents; students should show high analytical and synthetic capabilities and should be able to apply their knowledge to solve highly complex problems. ECTS grade : B Very good (27-29) - Grade descriptors: Good knowledge of the teaching contents and excellent language control; students should show analytical and synthetic skills and be able to apply their knowledge to solve problems of medium and, in some cases, even higher complexity. ECTS grade: C Good (24-26)- Grade descriptors: Good knowledge of teaching contents and good language control; the students should be able to apply their knowledge to solve problems of medium complexity ECTS grade: D Satisfactory (21-23)- Grade descriptors: Average knowledge of the teaching contents, in some cases limited to the main topic; acceptable ability to use the specific discipline language and independently apply the acquired knowledge. ECTS grade: E Sufficient (18-20) - Grade descriptors: Minimum teaching content knowledge, often limited to the main topic; modest ability to use the subject specific language and independently apply the acquired knowledge. ECTS grade: F Fail (1-17) - Grade descriptors: Lack of an acceptable knowledge of the main teaching content knowledge; very little or no ability to use the specific subject language and apply independently the acquired knowledge. Exam failed.
TEACHING METHODS	Lessons and lab exercises

MODULE
PSYCHOBIOLOGY

Prof. MASSIMILIANO OLIVERI

SUGGESTED BIBLIOGRAPHY	
Fondamenti anatomofisiologici dell'attivita' psichica. A cura di A. Maravita. Poletto Editore	
AMBIT	20879-Attività formative affini o integrative
INDIVIDUAL STUDY (Hrs)	51
COURSE ACTIVITY (Hrs)	24
EDUCATIONAL OBJECTIVES OF THE MODULE	
Promote the ability to analyze the relations between behavior, mental functions and brain structure, through the integration of biology, physiology and psychology.	

SYLLABUS

Hrs	Frontal teaching
3	Psychobiology of Vision
4	Motivation
4	Neural correlates of emotions
4	Brain rhythms and sleep
3	Cognitive control and executive functions
3	Psychobiology of memory
3	Psychobiology of Language

MODULE
NEUROPHYSIOLOGY

Prof. PIERANGELO SARDO

SUGGESTED BIBLIOGRAPHY

Kandel ER, Schwartz JH, Jessell TM 2012, Siegelbaum SA, Hudspeth AJ. 'Principles of Neural Science, 5th ed. McGraw-Hill, New York.
Larry Squire Darwin Berg Floyd E. Bloom Sascha du Lac Anirvan Ghosh Nicholas C. Spitzer Fundamental Neuroscience 4th Edition Academic Press

AMBIT	50505-Discipline del settore biomedico
INDIVIDUAL STUDY (Hrs)	81
COURSE ACTIVITY (Hrs)	44

EDUCATIONAL OBJECTIVES OF THE MODULE

Knowledge and ability to understand the macro and microscopical, molecular and electrophysiological basis and functions of Central and Peripheral Nervous systems of the human body, even including some specific advanced topics in the field. Making judgments: Being able to formulate hypotheses, collect and critically evaluate data, to solve problems. Being able to formulate personal judgments to solve analytical and critical problems ("problem solving") and being able to independently search for scientific information. Ability to interact with other professionals involved in the field of Neuroscience through an efficient teamwork. Ability of applying the knowledge of the principal regulatory mechanisms of neural circuit functions, as well as their integrative actions. Ability to collect and interpret data considered useful to inform judgments on basic aspects of the disciplines of the course. Ability to communicate information, ideas, problems and solutions related to the same disciplines. Development of learning skills useful to progress in studying further disciplines of the Degree Course.

SYLLABUS

Hrs	Frontal teaching
4	General rules of Sensory Coding; Computational models of Perception; Classification of Somatic Senses; Tactile and Position Senses; Active perception
4	Pain and Thermal Sensations; Central and peripheral sensitization Headache and Chronic Pain Physiology; Pain Suppression ("Analgesia") System in the Brain and Spinal Cord
2	The Chemical Senses—Taste and Smell
6	Optics of Vision; Anatomy, Receptor and Neural Function of the Retina Photochemistry of Vision and Color vision; Fields of Vision; Perimetry; Visual Pathways; Organization and Function of the Visual Cortex; Eye Movements and Their Control; Autonomic Control of Accommodation and Pupillary Aperture
2	Tympanic Membrane and the Ossicular System; Cochlea; Central Auditory Mechanisms
5	Motor Functions of the Spinal Cord; Motor Units; the Cord Reflexes; Muscle Sensory; Receptors—Muscle Spindles and Golgi Tendon Organs—And Their Roles in Muscle Control ; Flexor Reflex and the Withdrawal Reflexes. Crossed Extensor Reflex; Reciprocal Inhibition and Reciprocal Innervation; Spinal Cord Transection and Spinal Shock
6	Motor Cortex and Corticospinal Tract; Vestibular Sensations and Maintenance of Equilibrium; Cerebellum and Its Motor Functions; Basal Ganglia—Their Motor Functions
1	The Autonomic Nervous System and the Adrenal Medulla
2	States of Brain Activity—Sleep, Brain Waves, Epilepsy; Clinical Neurophysiology: EMG, EEG, Evoked Potentials

Hrs	Practice
4	Electroencephalography
4	Electromyography and repetitive nerve stimulation
4	Evoked potentials