

University of Trieste
Department of Life Sciences

International Master's Degree in Neuroscience
(LM-6 Classe delle Lauree in Biologia)

Annex 2 (Allegato 2)

Fundamental courses

CELLULAR AND MOLECULAR NEUROBIOLOGY
(NEUROBIOLOGIA CELLULARE E MOLECOLARE)

Aims

The aim of the course is to familiarize the students with the concept of the relationship between the structure of the different subcellular structures of a neuron and their role in the physiological functions with emphasis on the molecular mechanisms. The practical and theoretical lectures also aim at introducing the students to the scientific methodology typical of cellular neurobiology.

COGNITIVE NEUROSCIENCE
(NEUROSCIENZE COGNITIVE)

Aims

To provide a brain-based account of cognition, and a complete knowledge of the neuroscience methods. To provide a brain-based account of sensation and perception, and to develop practical knowledge of psychophysical methods.

DEVELOPMENTAL NEUROGENETICS
(NEUROGENETICA DELLO SVILUPPO)

Aims

To understand nervous system development through the overview of the major topics of brain and spinal cord embryological development, at the genetic, molecular and cellular level. To understand the genesis of neuronal connectivity patterns in complex nervous systems

INTEGRATIVE NEUROPHYSIOLOGY
(NEUROFISIOLOGIA INTEGRATIVA)

Aims

This part of the course will focus on main principles of sensory-motor integration. Students will learn to consider sensory and motor systems as a functionally unique apparatus devoted to the interaction with the external world.

MOLECULAR NEUROPHYSIOLOGY
(NEUROFISIOLOGIA MOLECOLARE)

Aims

The purpose of the course is to provide a sound basis of membrane biophysics, ion channels and receptors to understand the fundamental molecular processes responsible for chemical and electrical cell communication. In particular, the course will focus on the mechanisms responsible for cellular excitability, in both central and peripheral nervous systems.

NEUROANATOMY AND NEUROPHARMACOLOGY

(NEUROANATOMIA E NEUROFARMACOLOGIA)

Aims

To introduce the principles at the basis of the pharmacokinetic and pharmacodynamic properties of the drugs, especially of those acting at the central nervous system

NEUROFUNCTIONAL TECHNIQUES

(TECNICHE NEUROFUNZIONALI)

Aims

Understanding the physical and physiological basis of the modern techniques used in human brain mapping. To be able of designing and performing an MRI study for brain mapping. The student will also learn the basic aspect of recording and analyze the electrical brain signals with particular emphasis on the basic approaches to build a brain computer interface.

NEUROPATHOLOGY

(NEUROLOGIA)

Aims

The course seeks to provide the basic tools for the understanding of the physiopathological, symptomatological, diagnostic and therapeutic aspects of some of the most important neurodegenerative diseases, and their modeling in animals. The feasibility of these models and the potential for translating the arising experimental data into sound clinical practice, will be addressed. The students will therefore be able to associate the neural pathology recapitulated by each model to the most suitable/updated strategies for its diagnosis or therapy.

Suggested optional courses

ADVANCED NEUROPHARMACOLOGY

(NEUROFARMACOLOGIA AVANZATA)

Aims

The course in Advanced Neuropharmacology is intended to provide students with a detailed up-to-date knowledge of certain specific subject areas of topical, clinical and neuropharmacological relevance that are not covered elsewhere (or in such detail) in the rest of the Masters Course. The course focuses on the important area of common drugs of abuse, local and general anaesthesia, the mechanisms involved in the control of appetite and factors contributing to obesity, and finally current antiepileptic drug therapies.

BIOCHEMISTRY OF AGE RELATED DISEASES

(BIOCHIMICA DELLE MALATTIE CORRELATE ALL'ETA)

Aims

Students will reinforce their knowledge of biochemistry, through the deepening of energy metabolism and intermediate metabolism. The course focuses on biochemistry of oxidative stress, alterations of metabolism in diseases related to age, diets and health and molecular nutrition.

ECONOMICS AND BUSINESS MANAGEMENT

(ECONOMIA E GESTIONE DELLE IMPRESE)

Aims

In this course, students will learn the process of how to create an innovation-based new venture. Students will develop the essential parts of a business plan and investor pitch as a useful vehicle to achieve this goal.

NEUROONCOLOGY
(NEUROONCOLOGIA)

Aims

To provide an overview about neuro-oncology, neuro-anatomy, epidemiology, tumor grading and tumor classification. To give an introduction to molecular neuro-oncology and to critical thinking in neuro-oncology.