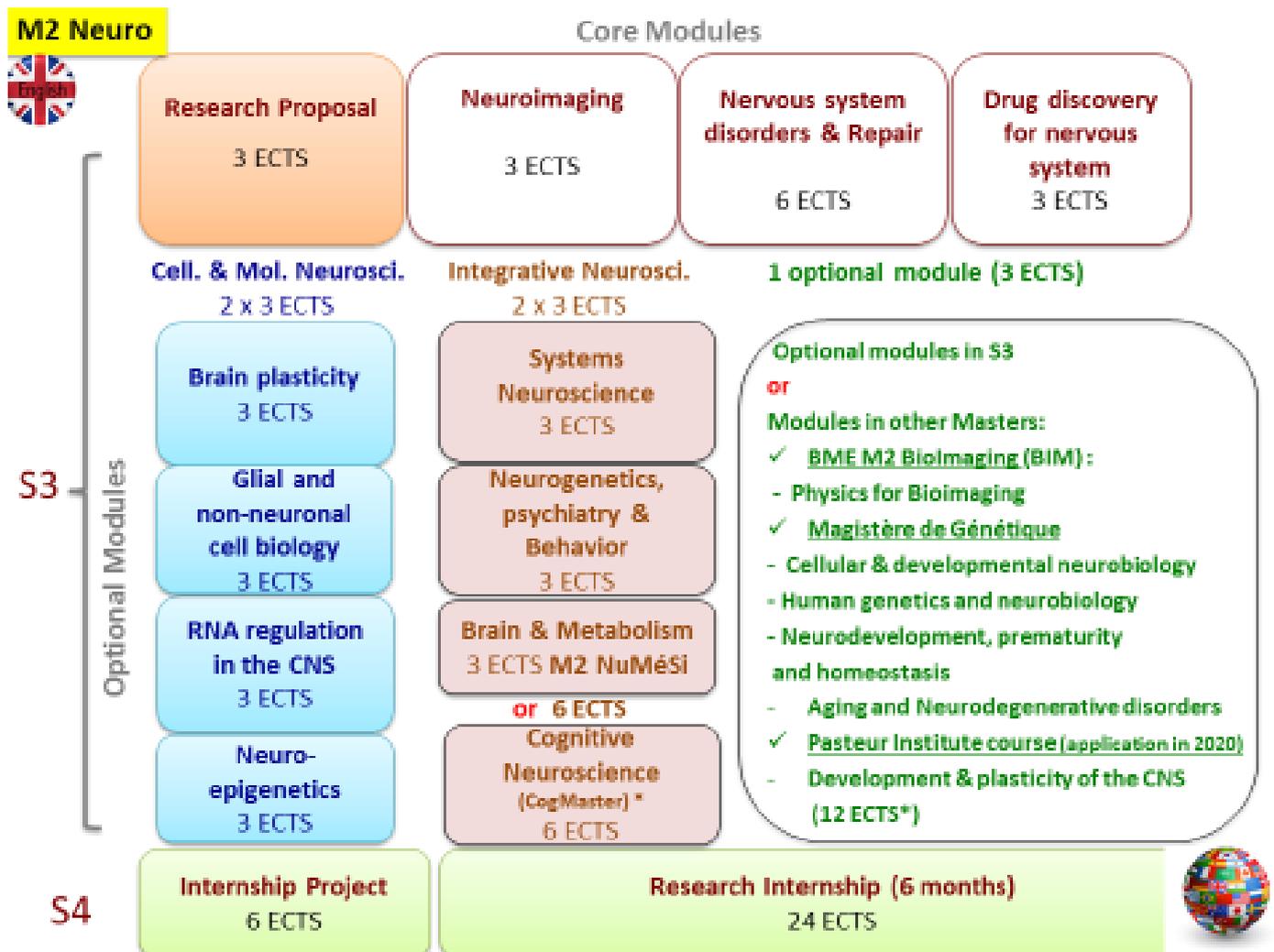


MASTER M2-NEURO





MASTER M2-NEURO

FICHE UE



Course Title: Research proposal (ResProposal)

Course(s) supervisor(s): See M2 Coordinator

Total number of hours: no lectures or practical sessions, but personal work

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: To be able to write and defend a research proposal over 3 years based on a scientific publication, and fictive collaborations through interactions with the scientific community, researchers and engineers in research labs or technical facilities. The student has to write a proposal according to the instructions given at the beginning of the semester and finally be able to defend the proposal in front of a Jury.

Exact location: Cliquez ici pour entrer du texte.

Mandatory course

Prerequisites/skills needed: M1 Neuroscience (UE Methodologies in Neuroscience S1 and S2)

Key words: Research project; experimental design; scientific report; scientific collaboration

Teaching methods and activities: personal/team work (to be interactive with researchers/engineers)



MASTER M2-NEURO

FICHE UE



Course Title: Neuroimaging (Imaging)

Course(s) supervisor(s):

Title: MCU Paris Descartes

First name: Clément

LAST NAME: RICARD

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: Give an overview of the different neuroimaging techniques and approaches from the researcher, clinician and industrial point of view.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Mandatory course

Prerequisites/skills needed: Knowledge in neuroanatomy (attending the M1 « Neuroanatomie fonctionnelle » course is not mandatory but recommended).

Key words: Neuroimaging, Optics, MRI, CT-Scan, Ultrasound, Nuclear imaging

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Drug Discovery for Nervous system (Drug Discovery)

Course(s) supervisor(s):

Title: CR CNRS

First name: Nicolas

LAST NAME: MARIE

Title: Prof. Paris Descartes

First name: Charbel

LAST NAME: MASSAAD

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: Neuropharmacology is the study and understanding of the actions of chemical agents on neurobiological processes in nervous system. Students will discover the recent advances in neuropharmacology and some aspects of the development of drugs for the nervous system regarding medical specialties.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Mandatory course

Prerequisites/skills needed: Strong background in physiology and neuropharmacology

Key words: Optopharmacology, drug development, biased ligands, drug delivery

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Nervous system disorders and repair (NeuroPathRepair)

Course(s) supervisor(s):

Title : Prof. Paris Descartes

First name: Mehrnaz

LAST NAME: JAFARIAN-TEHRANI

Total number of hours: 48h

Number of ECTS: 6

Semester: Semester 3 (M2)

Description: Recent advances in the pathophysiology of nervous system (CNS and PNS) disorders including neurodegenerative diseases, psychiatric disorders, movement disorders, pathologies of myelin, brain injury and cerebrovascular diseases, neurotropic viral infection, neuro-oncology and neuropathy. Some aspects of nervous system repair are taught related to stem cell therapy, neuroprotection, physical exercise and brain stimulation.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Mandatory course

Prerequisites/skills needed: Neurobiology, neuroanatomy

Key words: CNS and PNS disorders, Psychiatric disorders, Parkinson, Alzheimer, Huntington, Prion diseases, cerebrovascular diseases, stroke, brain injury, multiple sclerosis, movement disorders ALS, SMA, Neurotropic viral infections, Neuro-oncology

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Brain Plasticity (BrainPlasticity)

Course(s) supervisor(s):

Title: MCU Paris Diderot

First name: Isabelle

LAST NAME: CAILLE

Title : DR INSERM

First name: Thierry

LAST NAME: GALLI

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: Neural plasticity is the capacity of the nervous system to constantly modify itself throughout an individual's life. The aim of this class will be to understand how behavioral experiences and neural activity can modify the structure and function of neural circuits. We will also consider how age and diseases can differentially affect these processes.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Optional course

Prerequisites/skills needed: Knowledge in cellular and molecular neurobiology

Key words: structural plasticity, synaptic plasticity (LTP, LTD), Genomic Plasticity, synaptic pruning, autophagy, critical periods, learning and memory, adult neurogenesis, maladaptive plasticity in brain disorders and ageing, glial plasticity

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Epigenetic, development and brain integrity (NeuroEpigenetics)

Course(s) supervisor(s):

Title: DR CNRS

First name: Valérie

LAST NAME: MEZGER

Title: MCU Paris Diderot

First name: Délara

LAST NAME: SABERAN-DJONEIDI

Title : MCU Paris Diderot

First name: Véronique

LAST NAME: DUBREUIL

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: The course aims at providing in-depth research-based knowledge about the epigenetic processes that govern behaviors and brain functions. The student will appreciate how basic epigenetic mechanisms tightly regulate brain development, neural cell differentiation and brain integrity, and how the perturbation of normal epigenetic processes lead to a wide spectrum of neurodevelopmental and neuropsychiatric disorders. Moreover, special focus will be put on the impact of environmental insults on the neural epigenome and neural cell fate during development and in a lifetime manner, to the protective responses, which underlies the proper brain functions.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Optional course (maximum 16 students)

Prerequisites/skills needed: brain development, molecular and cellular biology

Key words: Epigenome, neurodevelopment, brain integrity, NGS, cohort analysis, neurodegenerescence

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Glial and non-neuronal cell biology (NeuroGlia)

Course(s) supervisor(s):

Title: Prof. Paris Descartes

First name: Charbel

LAST NAME: MASSAAD

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: The aim of this teaching unit is to learn the recent advances in glial biology and glial and non-glial cell interactions. Besides the main courses, tutorials will guide the students to perform innovative academic project based on the topics developed during the main lectures.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Optional course

Prerequisites/skills needed: cellular and molecular neurobiology, electrophysiology

Key words: schwann cell, astrocyte, oligodendrocyte, microglia, endothelial cell, neurovascular unit, cell interaction, neuron-glia interaction

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: RNA regulation in the CNS (RNAregCNS)

Course(s) supervisor(s):

Title: MCU Paris Descartes

First name: Laure

LAST NAME: WEILL

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: The course provides an in-depth knowledge on RNA metabolism and RNA regulation and its role in neurobiology: brain development and cell differentiation, plasticity and how RNA deregulation can lead to different neuropathology.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Optional course

Prerequisites/skills needed: Molecular Biology

Key words: Ribonucleopathy (splicing disease), RNA localization, local translation, non coding RNA, mRNA bodies

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Systems and integrative Neuroscience (NeuroSystems)

Course(s) supervisor(s):

Title: CR CNRS

First name: Mathieu

LAST NAME: BERANECK

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: the goal of the *Systems and Integrative Neuroscience* course is to provide the student the basic knowledge regarding the methodologies and approaches used to study functional neural systems. The course brings together teachers and researchers who are studying different functions on various species. They all work to understand how functions emerge by studying their respective systems at different levels with a so-called integrative approach. For each system we will consider the role of the electrophysiological properties of the neurons, of the properties that emerge from neural networks and microcircuits, and relate these properties to quantified behaviours through modeling.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Optional course

Prerequisites/skills needed: Master 1 in Neuroscience; basic knowledge regarding sensory and motor systems; basic knowledge about cellular electrophysiology

Key words: multisensory integration; sensory systems; motor systems; sensorimotor; balance; orientation & navigation; basal ganglia-thalamus-cortical loop; cerebellum; oculomotor systems; electrophysiological intrinsic properties and synaptic properties; microcircuits; models of action selection; models of learning; statistical models; principle of maximum likelihood; bayesian models; initial theories; memory & learning; Hebb theory and experimental demonstrations

Teaching methods and activities: lectures (CM) Practical sessions (TD)



MASTER M2-NEURO

FICHE UE



Course Title: Neurogenetics, psychiatry and behavior (NeuroPsyGenetics)

Course(s) supervisor(s):

Title: CR INSERM

First name: Nicolas

LAST NAME: RAMOS

Total number of hours: 24h

Number of ECTS: 3

Semester: Semester 3 (M2)

Description: This course aims to explain the interface between basic research in neuroscience, through different strategies, especially molecular biology of genetics, epigenetics and pharmacogenetics, and clinical research to understand behavior and psychiatric disorders. It also aims to present clinical research in order to show its contribution to the understanding of psychiatric diseases and the interest of developing translational research. In the end, this course aims to show by practical examples the interest of neuropsychiatric domains in the understanding of normal and pathological behaviors.

Exact location: Faculty of Basic and Biomedical Sciences, 45 rue des Saints-Pères, 75006 Paris

Optional course

Prerequisites/skills needed: M1 in science with a good understanding in fundamental neuroscience, genetics or molecular biology or M1 in healthy with the medical practice in neuroscience, psychiatry or pharmacology.

Key words: addiction, brain molecular biology, Epigenetics, Genetics, human behavior, psychopharmacogenetics, translational psychiatry

Teaching methods and activities: lectures (CM) Practical sessions (TD)