Aim of the course

The main objective of the course is to give an overview on the basic methods, shared disciplinary concepts and current theoretical models of Neuroscience, as a timely and developing multidisciplinary approach in understanding our brain.

Learning outcome, competences

Knowledge:
- Psychophysiological, Neuroscience and Neuroanatomy concepts
- Current methods and main objectives in Neuroscience
- Basics in Neuroanatomy

Attitude:
- Utilisation of knowledge in scientific communication, presentation

Skills:
- Skills of applying main methods
- Skills of identifying related neurological and neuroanatomical structures of psychological functions

Content of the course

Topics of the course
In modular structure, covering the following fields of research

Psychophysiology
5x3 hours
- Methods in neuroscience
- Psychopharmacology
- Wakefulness, sleeping and attention regulation
- Affective processes, stress
- Learning and memory

The neuroscience of main psychological functions
3x1.5 hours
- Perception
- Object perception
- Attention

Affective Neuroscience
3x 1.5 hours
- Physiological needs and brain regulation
- Psychology and physiology of Pain
- Neuronal basis of social perception and empathy

Introduction to Neurology and Neuroanatomy
3x3 hours or 6x1.5 hours

Computational methods in Neuroscience and Consciousness
2x3 hours
- Neural coding
- Consciousness
- Computational methods in neuroscience

Learning activities, learning methods
Lectures and interactive discussions

**Evaluation of outcomes**

**Learning requirements, mode of evaluation, criteria of evaluation:**

**requirements**
- Reliable basic knowledge in the domain of neuroscience and neuroanatomy

**mode of evaluation:** written exam

**criteria of evaluation:**
- Knowledge on basic concepts and the skill of utilizing the models of neuroscience adequately

**Reading list**

**Psychophysiology:**

**Mandatory readings:**

**Consciousness:**

*Mandatory Reading list:*

*Recommended:*

**Neural coding:**

*Mandatory Reading list:*
- John von Neumann Neumann The Computer and the Brain (The Silliman Memorial Lectures Series)

*Recommended:*

**Computational methods in neuroscience**

*Mandatory Reading list:*


*Recommended:*
- Peter Dayan: Theoretical neuroscience (Computational and Mathematical Modeling of Neural Systems)
- Rieke F Warland D, van Steveninck R, Bialek W: Spikes: Exploring the Neural Code (Computational Neuroscience)