CCNM17-108, Neurobiology,
Course Description

Aim of the course

Aim of the course: The course aims to overview the fundamental structural and dynamic principles of neurobiology. First, it decomposes the nervous system into the basic cellular constituents and mechanisms, and then redintegrates them into a large network model of the macroscopic brain. The course will step-by-step introduce neurons, circuitries, systems and macroscopic functional networks. It will review the functional segregation of cortical areas and their association with subcortical structures from systems neuroscience and neuroanatomical point of views. Individual lectures will be devoted to the major neural systems and cortical areas and their relationship to sensory, perceptual, memory, language, motor and executive functions. Finally, the course will cover the basic brain rhythms, EEG, and the role of oscillations in control of sensory integration, perception, memory functions and consciousness. Special focus will be given to related neurological disorders.

Learning outcome, competences
knowledge:
To ensure students can read articles, understand the methods and interpret results.

attitude:
is sensitive to and interested in noticing psychological phenomena and problems

skills:
To provide an overview of traditional and cutting-edge experimental techniques.

Content of the course

Topics of the course
- History, Neurons, Networks, Basic Neuroanatomy
- Brain Lobes
- Neurons, Networks, Basic Neuro (cont.)
- Methods 1-2: EEG/EcoG
- Consciousness, Pathology (Coma), Altered States
- MEG: MEG: Sensory and Motor Function and Integration
- Epilepsy
- Stimulation (TMS / DBS)

Learning activities, learning methods:
- Lectures and interactive discussions

Evaluation of outcomes

Learning requirements, mode of evaluation, criteria of evaluation:
requirements
- Attendance,
- 2 presentations
- 1 essay.

- mode of evaluation: examination and practical course mark

criteria of evaluation:
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Reading list
Compulsory reading list
- Gazzaniga, M. S. (Ed.). (2013). Cognitive neuroscience: The biology of the mind. (4th ed.). New York: W. W. Norton & Company.
- Kandel, E. R, Schwartz, J. H., Jessell, T. M., Siegelbaum, S. A., & Hudspeth, A. J. (Eds.). (2012). Principles of Neural Science. (5th ed.). New York: McGraw-Hill.
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Recommended reading list
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