**Course name:** Electrophysiological methods for the study of the nervous- and muscular-systems  
**Credits:** 5

**Class type, hours per week:** lecture 2, classroom practice 2

**Type of the exam:** weekly written tests from the subject of the previous week, two written tests in the course of the semester, oral examination at the end of the course

**Prerequisites:** Basis of neurobiology course

### Course description:

In the course the students get acquainted with electrophysiological techniques and devices used in neuroscience and in every day's clinical practice. Most of the methods use information processing techniques. The characteristics of the bioelectrodes are discussed in details since they make the connection between the living tissue and the manmade recording apparatus. In the course we deal with the bioelectric and biomagnetic processes of the nervous and muscle systems.

**Topics of the course:**
- Subject and history of electrophysiology
- Characteristics of electrodes
- Methods of intra- and extra-cellular microrecording
- Electroencephalography
- Event-related potentials
- Generation of brain bioelectric signals
- Magnetoencephalography
- Electromyography
- Electrocardiography
- Mathematical methods for analysis of the bioelectric signals

### Required reading:

The lecture material are distributed to the students in form of handout.

### Recommended reading:


**Lecturer:** György Karmos, M.D., Ph.D., emeritus professor

**Additional lecturers:** István Ulbert, M.D. D.Sc., professor, Richárd Fiáth, Domonkos Horváth, Bálint Péter Kerekes PhD students