

PGS COURSE for the Ph.D. BIOMEDICINE study program

Name of the course: Electrophysiological methods in clinical practice and research

Coordinator: Prof. MUDr. Otomar Kittnar, CSc.

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Registration fee: no fees

Accommodation for attendees is not being provided by organizers of the course

Course accomplishment requirements: Credit given based on attendance

Program:

1. Introduction to the subject (biophysics and electrophysiology of the cell membrane, information theory, signal transduction process). Differences and characteristics of bio-signals (stochastic vs. deterministic, stationarity, ergodicity, etc.).
2. Methods of registering bio-electrical signals (electrodes, operational amplifiers, ADC convertors, etc.). Preprocessing, processing and postprocessing of digital signals.
3. Analysis of electrophysiological signals in time and frequency domain. Harmonic analysis (FFT and others).
4. Automated ECG analysis. EEG signal processing – brain mapping, brain-computer interface.