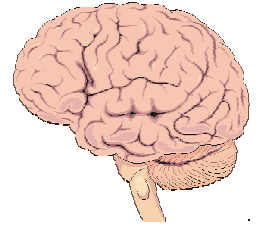


0430 L 152 2 SWS Vorlesung

Bioelectromagnetism

3 ECTS



During the Winter Semester 2017/2018 the lecturing course on Bioelectromagnetism will be given at TUB/FG EMSP. The lecturer will be Professor Jaakko Malmivuo.

The course provides a general view of bioelectromagnetism and describes it as an independent discipline. It begins with a historical overview of the many innovations and innovators on whose work the field rests. This is followed by a discussion of both the theories and experiments which were contributed to the development of the field.

The physiological origin of bioelectric signals, like *electrocardiogram*, ECG, and *electroencephalogram*, EEG, is discussed in detail. Similar discussion is made for the corresponding biomagnetic signals, MCG, MEG, etc. The sensitivity in a given measurement situation, the energy distribution in stimulation with the same electrodes, and the measurement of impedance are related and described by the electrode lead field. It is shown that, based on the reciprocity theorem, these are identical and further, that these procedures apply equally well for biomagnetic considerations.

The difference between corresponding bioelectric and biomagnetic methods is discussed. It is shown, that all subfields of bioelectromagnetism obey the same basic laws and they are closely tied together through the principle of reciprocity. Thus the course helps the student to understand the properties of existing bioelectric and biomagnetic measurements and stimulation methods and to design new systems.

The course is based on the book:
Malmivuo and Plonsey: Bioelectromagnetism: www.bem.fi/book/
Detailed course information will be found from: www.bem.fi/edu

The course starts on: **18.10.2017.**
The lecturing hours are: Wednesdays 10:00 –12:00
The Lecture Hall is: HFT 101.

For more information, please contact:
Prof. Dr. Reinhold Orglmeister: reinhold.orglmeister@tu-berlin.de
Prof. Jaakko Malmivuo: jaakko.malmivuo@campus.tu-berlin.de
TU Berlin, Sekretariat EN3, Einsteinufer 17, 10587 Berlin, Room 536
www.emsp.tu-berlin.de/index.php?id=170842
www.bem.fi/malmivuo