Course title: Data Acquisition in Biomedicine
Course code: 60037
ECTS credits: 6
Requirements: None
Basic information
Level of studies: Undergraduate applied studies
Year of study: 2
Trimester: 6
Goal: Introducing students to the basic principles of measurement, basic groups of instruments used in medicine and the principles used in electro-physiological measurement equipment.
Outcome: Students will acquire professional knowledge related to the theoretical foundations, principles and application in the field of modern medical devices and technologies. Students should be able to solve problems in real-life conditions in the field of medical devices and technologies and medical informatics.
Contents of the course
Theoretical instruction
1. Biosignals, types and characteristics
2. Cell membrane. Cell action potential. Synapse
3. Conversion of biosignals to electrical and non-electrical quantities, Sensors, Transducers. Electrodes.
4. Measurement of biopotential (EEG, EMG)
5. Measurement of biopotential (ENG, ECG. EOG, ERG)
6. Electrical and magnetic stimulation
7. Hyperbaric medicine
8. Optical methods in medicine
9. Laser (working principle, properties, interaction with living tissue, application)
10. Ultrasound in diagnosis and therapy.
Practical instruction (Problem solving sessions/Lab work)
1.
2.
3.

Textbooks and References

1. D.Popovic, M.Popovic, M.Jankovic, Biomedical Measurements and Instrumentation, Akademska misao, Beograd 2010

2. Arthur b. Ritter, Stanley Reisman, Bozena B. Michiak, Biomedical Engeeineering Principles, CRC -Press Taylor and Francis Group, 2005

3. Medical Instrumentation. Application and Design, John G Webster, editor , Wiley

Number of active classes (weekly)

Lectures: 4

Practical classes: 2

Other types of classes:

Grading (maximum number of points: 100)

Pre-exam obligations: Points

Activities during lectures:

Activities on practical exercises:

Seminary work:

Colloquium: 70

Final exam: Points

Written exam: 30

Oral exam:

Lecturer

Danica Mamula Tartalja, PhD

Associate