

Course title: New Technologies in Biomedicine
Course code: 60039
ECTS credits: 6
Requirements: None
Basic information
Level of studies: Undergraduate applied studies
Year of study: 3
Trimester: 8
Goal: Introducing students to new diagnostic and therapeutic technologies in medicine, as well as general principles of dosimetry and radiation protection, quality assurance and regulations in this area.
Outcome: Students should be able to solve problems in the field of imaging, radiology, technical service and support, quality management, device performance testing, application development. Students should be able to assist in the planning and implementation of radiotherapy, as well as the design and implementation of the project, individually or in a team.
Contents of the course
Theoretical instruction
1. Nuclear magnetic resonance (principle and application)
2. Radioactivity. Interaction of (non) ionizing radiation with (living) material, Biological effects of radiation. Radiation detection, Personal monitoring devices
3. Dosimetry, basic dosimetric quantities
4. Radiological diagnostics (X-ray, CT)
5. Nuclear medicine (Gamma camera, Gamma knife, SPECT, PET)
6. Radiotherapy. Radiotherapy planning, Classification of target organs, Quality assurance. Ionizing radiation protection in medical and other applications
7. Regulations in the field of ionizing radiation protection
8. Nanotechnology in medicine
Practical instruction (Problem solving sessions/Lab work)
1.
2.
3.

Textbooks and References
1. Arthur B. Ritter, Stanley Reisman, Bozena B. Michiak, Biomedical Engineering Principles, CRC -Press Taylor and Francis Group, 2005
2. beleske_kli_10 POPOVIC
3. Medical Instrumentation. Application and Design, John G Webster, editor , Wiley
Number of active classes (weekly)
Lectures: 4
Practical classes: 3
Other types of classes:
Grading (maximum number of points: 100)
Pre-exam obligations: Points
Activities during lectures: 10
Activities on practical exercises:
Seminary work:
Colloquium: 60
Final exam: Points
Written exam: 30
Oral exam:
Lecturer
Danica Mamula Tartalja, PhD
Associate