

Study program: Integrated academic studies in medicine			
Type and level of the study program: integrated academic studies			
Course title: Basics of biomedical engineering for medical doctors (M4-BMI)			
Teacher: Lazar U. Velicki, Oto F. Barak			
Course status: elective			
ECTS Credits: 3			
Condition: -			
Course aim Introducing medical students in to the newest trends of biomedical engineering. Enhancing the necessity of synergy between biomedical engineering and medical doctors as well as necessity of the implementation of the newest biomedical devices.			
Expected outcome of the course: Increasing of the level of the knowledge of biomedical engineering for medical students as well as consciousness of the necessity of the synergy between medical doctors and biomedical engineers.			
Course description <i>Theoretical education</i> 1. Bioinformatics. 2. Biomechanics. 3. Dynamics of the soft tissues: Kinesiology; Motion of the animals analysis; Musculoskeletal and orthopedical biomechanics; Cardiovascular biomechanics; Ergonomics; Occupational biomechanics; Implantational medicine, orthotics, prosthetics; Rehabilitation; Biomechanics of sport; Allometry; Biomechanics of injury; Biomechanics of continuum; Biomechanics of fluids; Biotribology; Comparative biomechanics. 4. Biomaterials. 5. Biomedical optics. 6. Biological (tissue) engineering. 7. Genetical engineering. 8. Neurological engineering. 9. Pharmaceutical engineering. 10. Medical devices. 11. Medical imaging. 12. Implants. 13. Bionics. 14. Clinical engineering. 15. Robotics in medicine: Types of Medical robots; Surgical robots; Rehabilitation robots; Biorobots; Robots which enable telepresence; Robots in pharmaceutical automation; Robots for disinfection; Engineering in rehabilitation; Regulatory mechanisms in biomedical engineering; Training, education and licensing in biomedical engineering. <i>Practical education: exercises, other forms of education, research related activities</i> 1. Bioinformatics. 2. Biomechanics. 3. Biomaterials. 4. Biomedical optics. 5. Biomedical (tissue) engineering. 6. Genetical engineering. 7. Neurological engineering. 8. Pharmaceutical engineering. 9. Medical devices. 10. Medical imaging. 11. Implants. 12. Bionics. 13. Clinical engineering. 14. Robotics in medicine. 15. Types of medical robots. 16. Engineering in rehabilitation. 17. Regulatory mechanisms in biomedical engineering. 18. Training, education and licensing in biomedical engineering			
Literature <i>Compulsory</i> 1. Akay M. Wiley Encyclopedia of Biomedical Engineering. Wiley Interscience; John Wiley & Sons, Inc, Hoboken, New Jersey, 2006. 2. Lecturers printed lectures (or in electronic form); Literature proposed by each lecturer <i>Additional</i> 1. Upon mentors proposal			
Number of active classes			Other:
Lectures: 30	Practice: 15	Other types of teaching:	
Research related activities:			
Teaching methods			
Student activity assessment (maximally 100 points)			
Pre-exam activities	points	Final exam	points
Lectures	10	Written	20
Practices	20	Oral	30
Colloquium	10		
Essay	10		