



Study program: Integrated Academic Studies in Medicine
Course title: Biophysics
Teacher: Klisurić R. Olivera, Todorović M. Nataša, Ostojić V. Jelena, Nikolov B. Jovana
Course status: compulsory
ECTS Credits: 6
Condition:
<p>Course aim:</p> <p>The aim of this programme is to provide students with the opportunity to develop knowledge of physics needed to understand the function of the major systems of the human body, linking physics to physiology and healthcare. The aim is also to obtain a fundamental understanding of physical phenomena and processes that may be applied in new technologies for healthcare.</p>
<p>Expected outcome of the course:</p> <p>Upon successful completion of this course, students will demonstrate knowledge of basic physical principles and their applications to the understanding of human body and diagnostic systems used in many aspects of health sciences.</p>
<p>Course description</p> <p><i>Theoretical education</i></p> <ol style="list-style-type: none"> 1. Static Forces 2. Friction 3. Translational Motion 4. Angular motion 5. Elasticity and Strength of Materials 6. Fluids 7. The Motion of Fluids 8. Heat and Kinetic Theory 9. Thermodynamics 10. Transport Through Neutral Membranes 11. Waves, sound and ultrasound 12. Electricity 13. Impulses in Nerve and Muscle Cells 14. Electrocardiogram 15. Biomagnetism 16. Optics 17. Atomic Physics 18. Nuclear Physics and Nuclear Medicine <p><i>Practical education</i></p> <ol style="list-style-type: none"> 1. Fluid Viscosity 2. Flow through a pipe 3. Microscope 4. Ultrasound 5. Magnetic resonance 6. Electrocardiogram 7. Optical Bench 8. Audiometry 9. Absorbed Radiation Dose 10. Radioactivity Measurement in Nuclear Medicine
<p>Literature</p> <p><i>Compulsory</i></p> <ol style="list-style-type: none"> 1. Paul Davidovits. Physics in Biology and Medicine 5th Edition. Academic Press 2018. ISBN: 9780128137161 2. George Hademenos. Schaum's Outline of Physics for Pre-Med, Biology, and Allied Health Students. McGraw-Hill Education 1998. ISBN-13: 978-0070254749

3. Biophysics DeMystiFied 1st Edition McGraw-Hill Professional; 2010. ISBN-13: 978-0071633642

Additional

1. Russell K. Hobbie, Bradley J. Roth. Intermediate Physics for Medicine and Biology 4th Edition. Springer Science+Business Media 2007, LLC. ISBN-10:0-387-30942-X
2. Suzanne Amador Kane. Boris A Gelman. Introduction to Physics in Modern medicine Third Edition. CRC Press; 3 edition 2020. ISBN-13: 978-1138036031

Number of active classes	Theoretical classes: 30	Practical classes: 15
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Teaching methods: Lectures, students practical work, teacher demonstrations, discussions, virtual science labs, projects, multimedia approach (ppt, video clips, animations)

Student activity assessment (maximally 100 points)

Pre-exam activities	points	Final exam	points
Lectures	20	Written	60
Practices	20	Oral	
Colloquium		
Essay			