UNIVERSITY OF NOVI SAD
FACULTY OF MEDICINE

Study program: Integrated Academic Studies in Medicine

Course title: Biophysics

Teacher: Klisurić R. Olivera, Todorović M. Nataša, Ostojić V. Jelena

Course status: compulsory

ECTS Credits: 6

Condition:

Course aim:

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.

Expected outcome of the course:

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.

Course description

Theoretical education

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

Practical education

1. Fluid Viscosity
2. Flow through a pipe
3. Microscope
4. Ultrasound
5. Magnetic resonance
6. Electrocardiogram
7. Optical Bench
8. Audiometry
9. Apsorbed Radiation Dose
10. Radioactivity Measurement in Nuclear Medicine

Literature

Compulsory

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 Editon. 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

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			