Study program: Integrated academic studies in Pharmacy

Type and level of the study program: integrated academic studies

Course title: BIOPHYSICS (PhI-BPHYS)

Teacher: Nataša M. Todorović

Course status: compulsory

ECTS Credits: 4

Condition: -

Course aim

The aim of the course is for the students to learn fundamental theoretical and practical knowledge in the field of physics necessary to acquire knowledge in farmaceutical subjects.

Expected outcome of the course:

Introduction to basic principles of general physics and modern applications of physics in understanding biomedical phenomena. Interdisciplinary connections. Expansion of already acquired knowledge, processing the basic laws of physics on a higher technical and scientific level in order to understand the content of vocational subjects taught during the study. The student will be able to successfully understand the contents of vocational subjects, and the principles of modern diagnostic and laboratory instrumentation (NMR, ultrasound, laser, ...).

Course description

Theoretical education

1. Mechanics (kinematics, dynamics, work and energy, gravitation, elements of special relativity, mechanics of solids , statics, elasticity of solids , vibrations , static liquids and gases, wave motion , acoustics)
2. Thermophysics (temperature and heat, body spreading, kinetic theory of heat, kinetic theory of gases , the distribution of energy over degrees)
3. Optics (nature of light, photometry, geometrical optics, wave optics)
4. Physical phenomena in micro-world (quantum properties, atomic radiation, the wave nature of matter , based on quantum mechanics, particle stationary states, basic atomic and molecular physics, physics of the atomic nucleus and its applications, elementary particles)

Practical education: exercises, other forms of education, research related activities

1. Surface Tension
2. Viscosity Fluids
3. Humidity
4. Mathematical Pendulum
5. The Gas Laws
6. Determining the Speed of Sound
7. Ohm's Law in Single Circuit Electricity
8. Measuring Temperature Coefficient of Resistance Using Wheatstone bridge
9. Determining the Focal Length of Lenses, Measuring Length
10. The Emission Spectra
11. Optical Rail
12. Photometry
13. Electrolysis
14. The Absorption of Gamma Radiation

Literature

Compulsory

1. Robert G. Brown, Introductury Physics I, Duke University Physics Department, 2013.
2. College Physics, Student Solutions Manual, OpenStax College
3. Online Physics Tutorials, http://www.physicstutorials.org/home/exams
4. Introductury Physics Laboratory Manual, Physics Department, The City Colleage of The City University of New York

Number of active classes				Other:
Lectures: 30	Practice: 30	Other types of teaching: -	Research related activities: -	-

Teaching methods Theoretical (lectures, PowerPoint presentations), computer tasks, experimental (lab)

Student activity assessment (maximally 100 points)

Pre-exam activities	**points**	**Final exam**	**points**
Lectures	10	Written	35
Practices	10	Oral	35
Colloquium	10	.....	
Essay			