SYLLABUS

1. Course title:

PHYSICS

2. Code:

3. Cycle of study:

1

4. ECTS credits:

7

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

None

7. Class restrictions:

8. Duration / semester:

1 2

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 2

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Pharmacy

11. Department/study program:

12. Lecturer:

Dr.sc. Feriz Adrović, red. prof

13. Lecturer's e-mail:

feriz.adrovic@untz.ba

14. Web site:

15. Course aims:

Adopt the basic knowledge in selected field of physics, fundamental laws and methodology of physics in order to understand the new scientific achievements in modern pharmacy. Adopt the basic concepts of physic of living matter. Acquire knowledge of the principles, procedures and instrumentation in modern physics that are applicable in pharmacy.

16. Learning outcomes:

Student will be able to formulate basic physical laws and phenomena, to understand the concepts of modern theory and experimental achievements in physics that are used in processes, procedures and methods in modern pharmacy.

17. Course content:

Basic concepts of measurement. Measurement data analyses. Classification of measurements errors. Fundamental concepts of mechanics. Structure of liquids. Surface tension. Phenomena on liquid and solid interfaces. Capillarity. Thermodynamics state functions. Basic criteria for thermodynamic equilibrium. Phase transitions. Electrical structure of matter. Electric dipole. Polar and nonpolar molecule. Basic concepts of electric current. Electric current in electrolytes. Electromagnetic waves. The nature of light. Resolution of optical instruments. Interference, diffraction and polarization of light. Optical activity of matter. Absorption and scattering of light. Basic functions of biological membranes. Transfer of matter through biological membranes. Permeability of biological membranes. The structure of atoms. The models of atom. Wave-particle duality. Electron microscope. Atomic spectra. X-rays. The quantum mechanical model of atom. Schrödinger equation. Quantization of angular momentum of electron. Bohr magneton. Spin of an electron. Russel-Suanders and jj coupling. Pauli principle and electron configuration in orbitals. The structure of molecules. Molecular spectra. The nature and types of molecular bonds. Basic properties of atomic nucleus. Types of radioactive decay. The natural ionizing radiation. UV radiation. Artificial sources of ionizing radiation. Fundamentals of radiation detection and dosimetry. Quantities and units in radiation dosimetry. Radiation protection.

18. Learning methods:

Classes will be realized through lectures and exercises. Student attendance on classes is mandatory. Students must actively participate in class discussions and problem solving.

19. Assessment methods:

Two exams (I and II) will be conducted during the lecture and laboratory classes while final exam will be held after the end of a semester. Final grade consist of: attendance and active participation in classes (lectures and exercisers), passed exams and final exam.

20. Assessment components:

Minimum points for passing grade: 55.
Maximum points: 100.

94 – 100	10	A
84 – 93	9	B
74 – 83	8	C
64 – 73	7	D
54 – 63	6	E
<54	5	F

21. Required reading list:

1. Adrović, F., Fizika - odabrana pogljavlja iz metrologije, mehanike, termodinamike i elektromagnetizma, Copygraf Tuzla, Tuzla, 2006.
2. Adrović, F., Fizika - odabrana poglavlja iz optike, atomske i nuklearne fizike, Copygraf Tuzla, Tuzla, 2006.
3. Saha, G. B., Fundamentals of Nuclear Pharmacy, fifth edition, Springer 2005.
4. Raković, D., Osnovi biofizike, Grosknjiga, Beograd, 1995
5. Coggle, J.E., Biological effects of radiation, Taylor and Francis Ltd. 1987.

22. Web sources:

23. Applicable starting from the academic year:

2012/13

24. Adopted in the Faculty/Academy session: