

Biophysics - course description

General information	
Course name	Biophysics
Course ID	13.9-WB-OS2P-Biofiz-S17
Faculty	Faculty of Biological Sciences
Field of study	Environmental Protection
Education profile	academic
Level of studies	First-cycle studies leading to Bachelor's degree
Beginning semester	winter term 2021/2022

Course information	
Semester	2
ECTS credits to win	5
Course type	obligatory
Teaching language	english
Author of syllabus	<ul style="list-style-type: none">dr Anna Timoszyk

Classes forms					
The class form	Hours per semester (full-time)	Hours per week (full-time)	Hours per semester (part-time)	Hours per week (part-time)	Form of assignment
Lecture	30	2	-	-	Credit with grade
Laboratory	30	2	-	-	Credit with grade

Aim of the course

The aim of education is the acquisition by the students ability to link theoretical knowledge with practical scills in the description of phenomena occurring in nature.

Prerequisites

Basic knowledge in the field of biology, chemistry, physics and mathematics provided by the program of studies of Environmental Protection.

Scope

Lecture: Biothermodynamics; termokinetics and thermoregulation of warm-blooded organisms; introduction to cell biophysics; lipid biophysics; biophysics of biological membranes and model biological membranes; introduction to tissue biophysics; biophysics of nervous and muscular tissue; photosynthesis and eye photoreception; biophysics of the sense of hearing; the effect of non-ionizing radiation on the living organism; the influence of ionizing radiation on the living organism; environmental pollution with various types of waves, eg electromagnetic smog, and human impact.

Laboratories: Biothermodynamics, thermokinetics and thermoregulation of warm-blooded organisms; issues covering basic values related to the construction of matter and impact

external factors (temperature, pressure, humidity) on the properties of matter; vibrating motion and mechanical waves; electromagnetic waves.

Teaching methods

lecture - multimedia presentation

laboratory - practical

Learning outcomes and methods of theirs verification

Outcome description	Outcome symbols	Methods of verification	The class form
The student works in a group and organizes work in a certain area.	<ul style="list-style-type: none">K1A_K01	<ul style="list-style-type: none">an observation and evaluation of activities during the classes	<ul style="list-style-type: none">Laboratory
The student is responsible for the safety of others in the group.	<ul style="list-style-type: none">K1A_K02	<ul style="list-style-type: none">an ongoing monitoring during classes	<ul style="list-style-type: none">Laboratory
The student is able to give definition, describe and explain basic phenomena and natural processes for matter construction, thermodynamics and radiation.	<ul style="list-style-type: none">K1A_W07	<ul style="list-style-type: none">a final testactivity during the classessprawozdanie	<ul style="list-style-type: none">LectureLaboratory
The student conducts the simple measurements of the work of environment and makes the reports on the results obtained.	<ul style="list-style-type: none">K1A_U02	<ul style="list-style-type: none">an observation and evaluation of the student's practical skillscarrying out laboratory reports	<ul style="list-style-type: none">Laboratory

Outcome description	Outcome symbols	Methods of verification	The class form
The student is aware of the importance of the subject knowledge, the ability to use knowledge in practice and recognize the interdisciplinary nature of the subject.	<ul style="list-style-type: none"> K1A_U23 	<ul style="list-style-type: none"> a discussion a final test an observation and evaluation of activities during the classes carrying out laboratory reports 	<ul style="list-style-type: none"> Lecture Laboratory
The student is able to characterize fundamental phenomena and processes of nature from the own knowledge, for example relative humidity or saturated vapor.	<ul style="list-style-type: none"> K1A_W08 	<ul style="list-style-type: none"> a discussion carrying out laboratory reports 	<ul style="list-style-type: none"> Laboratory

Assignment conditions

Lecture: exam - closed test with thresholds. The condition for passing the exam is to receive a minimum of 50% of correct answers.

Laboratory: the condition for passing is the theoretical preparation for the experiments, performing 14 experiments provided for in the laboratory program and performing a report on each of them, in accordance with the teacher's recommendations. reports they include the purpose of the experiment, a description of the experiment carried out, calculations based on the results obtained, analysis of the results and plotting of the graphs

To get a satisfactory grade it is necessary to obtain an average of all grades from theory and all grades from reports at 3.0.

Recommended reading

[1] Red. Jaroszyk F.: Biofizyka – podręcznik dla studentów, PZWL, Warszawa, 2001.

[2] Red. Terlecki J.: Ćwiczenia laboratoryjne z biofizyki i fizyki – podręcznik dla studentów, PZWL, Warszawa, 1999.

[3] Red. Hendrich A. i Michalak K.: Ćwiczenia laboratoryjne z biofizyki – skrypt dla studentów medycyny, Wydawnictwo AM we Wrocławiu, Wrocław, 2005.

[4] Red. Trębacz K.: Ćwiczenia z biofizyki dla studentów biologii i biotechnologii UMCS w Lublinie, Wydawnictwo UMCS, Lublin, 2002.

Further reading

[1] Red. Jóźwiak Z. i Bartosz G.: Biofizyka – wybrane zagadnienia wraz z ćwiczeniami, PWN, Warszawa, 2005.

Notes

Modified by dr Olaf Ciebiera (last modification: 19-05-2021 22:02)

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