COURSE DESCRIPTION CARD - SYLLABUS

Course name
Physics [S1Bud1>FIZ]

Course

Field of study
Civil Engineering

Year/Semester
1/1

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other (e.g. online)
0

Tutorials
30

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

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Prerequisites

1. Knowledge in physics and mathematics (core curriculum for secondary schools, basic level). 2. Ability to solve elementary problems in physics based on the acquired knowledge. 3. Ability to use available information sources to obtain information from the indicated sources. 4. Understanding the necessity of education in order to obtain qualifications appropriate for the future profession and performing social functions.

Course objective

1. Provide students with basic knowledge in physics, within the scope defined by the program content appropriate for the field of study: Construction. 2. Developing students" skills in solving simple problems in the field of physics and analyzing the results based on the acquired knowledge. 3. The ability to interpret the observed phenomena in the surrounding world based on the known laws of physics and their practical use in the field of construction.

Course-related learning outcomes

Knowledge:
- has knowledge of selected issues in: classical mechanics, gravity, oscillating and wave motion, thermodynamics, electricity and magnetism, electromagnetic waves and modern physics
- knows the application of the basic laws of physics in the field of selected issues of: classical mechanics, gravity, oscillating and wave motion, thermodynamics, electricity and magnetism, electromagnetic waves and modern physics to describe phenomena in the surrounding world.

Skills:
- is able to apply the basic laws of physics and simplified models to solve simple problems in the field of: classical mechanics, gravity, oscillating and wave motion, thermodynamics, electricity and magnetism, electromagnetic waves and modern physics
- is able to perceive and explain physical phenomena in the surrounding world on the basis of theoretical knowledge on selected issues of physics
- can use the indicated sources of knowledge to understand (list of basic literature) and is active in acquiring knowledge from other sources

Social competences:
- is actively involved in solving the problems posed, independently developing and extending its competences
- understands the need to expand knowledge of selected issues in physics in order to apply them in innovative solutions to technological and engineering problems in the field of construction
- is responsible for the reliability of the results of its work, it follows the principles of ethics

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lecture: test/open questions, W01-W02, K01-W03
mark: <=50% - ndst; 50,1-60% - dst; 60,1-70% - dst+; 70,1-80% -db; 80,1-90% - db+; od 90,1% - bdb).

Tutorials: assessment of a test to check the knowledge and/or current assessment of the student's activity in the classroom, U01-U02, K01-K03
mark: <=50% - ndst; 50,1-60% - dst; 60,1-70% - dst+; 70,1-80% -db; 80,1-90% - db+; od 90,1% - bdb)

Programme content

1. Introductory issues: development of physics and its division, SI units system, physical quantities.
2. Basics of classical mechanics incuding: physical quantities, vector description of motion, classification of movements, work, power, energy: kinetic energy, potential energy, conservative and non-conservative forces, kinematics and dynamics of progressive motion, kinematics and dynamics of rotational motion; free, forced (resonance) and damped harmonic vibrations, mechanical waves.
3.Interactions in nature, including: gravitational, electrostatic and magnetic interactions: the concept of the field, scalar and vector description of the field
4. Thermodynamics , including: ideal gas, real gas, ideal gas transformations, laws of thermodynamics, heat balance equations, Carnot cycle.
5. Selected issues of modern physics.

Teaching methods

Presentation of the above-mentioned lecture issues in the form of a lecture presentation, movies and experimental demonstrations.
Practice on the above-mentioned issues by solving problems for precisely defined conditions and data during tutorials.

Bibliography

Basic
1. D.Halliday, R.Resnick, J.Walker, Podstawy fizyki tom: 1-5, PWN Warszawa 2003.
2. Fizyka dla szkół wyższych, tom 1-3, OpenStax.org https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-1
https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-2
https://openstax.org/details/books/fizyka-dla-szk%C3%B3%C5%82-wy%C5%BCszych-tom-3
3. K.Jezierski, B.Kołodka, K.Sierański, Fizyka. Zadania z rozwiązaniami t 1-2, Oficyna Wydawnicza Scripta, Wrocław.

Additional
D. Halliday, R. Resnick, J. Walker – „Podstawy fizyki. Zbiór zadań".
B. Fabiański, Z. Paczkowski; „Zbiór zadań z fizyki dla kandydatów na wyższe uczelnie".
J. Kalisz. M Massalska, JM. Massalski; „Zbiór zadań z fizyki"
J.Masalski, Fizyka dla inżynierow t.1-2, WNT Warszawa 1980

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00