COURSE DESCRIPTION CARD - SYLLABUS

Course name
Technical Physics [S1IZarz1E>FT]

Course

Field of study
Engineering Management

Year/Semester
1/2

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
english

Form of study
full-time

Requirements
elective

Number of hours

Lecture
30

Laboratory classes
0

Other (e.g. online)
0

Tutorials
15

Projects/seminars
0

Number of credit points

4,00

Coordinators

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Lecturers

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Prerequisites

The student starting this subject should have a fundamental knowledge of physics and mathematics (program basis for high schools, standard level). She/he should be able to read with understanding. Student should have the ability to extract information from the recommended sources and skills in solving elementary problems in physics based on the knowledge possessed. Student should be ready to cooperate within a team.

Course objective

To provide students with the basic knowledge of Physics necessary for the proper use of technical solutions in various fields of technology. Understanding of the basic physical laws and their relationship to the surrounding world. Developing students' skills to solve problems of interdisciplinary issues. Developing teamwork skills in students.

Course-related learning outcomes

Knowledge:
The student names and describes basic methods, techniques, tools, and materials used in solving simple engineering tasks in the field of engineering activities [P6S_WG_16].
The student names and describes typical industrial technologies and has in-depth knowledge of machine construction and operation technologies [P6S_WG_17].

Skills:
The student uses analytical, simulation, and experimental methods to formulate and solve engineering tasks [P6S_UW_10].
The student applies typical methods to solve simple problems in the field of machine construction and operation [P6S_UW_15].

Social competences:
The student is aware of the importance of non-technical aspects and consequences of engineering activities, including their impact on the environment, and the associated responsibility for the decisions made [P6S_KR_01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified by an exam in the form of a single-choice test. The test consists of 20-25 (test) questions, with the same score. There are five possible answers to each question and only one answer is correct. Passing threshold: 50% of points. Topic for passing on the basis of which the test questions are formed will be given to students using the university's e-mail system and / or on the ekursy platform. Examples of the questions are presented after each lecture.
The skills acquired during the calculus classes are verified by solving accounted tasks in class and writing the final test. The test consists of 5 tasks, pass mark: 50% of points.
Formative assessment: based on an assessment of the current progress in the implementation of tasks assessed by written work.
Summative assessment: based on the results of the average partial grades of the formulating assessment. Passing threshold: 50% of points.

Programme content

The program of the subject covers such issues as: vectors - vector description and basic operations on vectors; translational motion - kinematic of point-like particle; rotational motion, dynamic of point-like particle- principles of energy, momentum, mass and moment conservation; dynamics of rotational motion; electrostatics - analysis of the charge behavior in the electrostatic field, Maxwell equations, electromagnetic waves, geometrical and wave optics; thermodynamics, elements of modern physics .

Teaching methods

1. Informative lecture - multimedia presentation, illustrated with examples of analysis of various problems related to engineering issues. Discussion in the form of questions
2. Exercises - solving problems in physics at auditory classes.

Bibliography

Basic:
1. D.Halliday, R.Resnick, J.Walker, Podstawy fizyki t 1-5, PWN Warszawa 2003
2. Fizyka dla inżnierów cz. 1 i 2, J. Massalski, M. Massalska, Wydawnictwa Naukowo-Techniczne, Warszawa, 2006
3. J. Massalski, M. Massalska. Zadania z rozwiąaniami t 1-2.

Additional:
1. Online textbooks: Fizyka dla szkół wyższych:
https://openstax.pl/pl/
2. Marta Skorko, Fizyka, podręcznik dla studentów wyższych technicznych studiów zawodowych

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
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)	55	2,00