COURSE DESCRIPTION CARD - SYLLABUS

Course name
Physics [S1ZiIP2>FIZ]

Course

Field of study
Management and Production Engineering

Year/Semester
1/2

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
30

Laboratory classes
15

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

5,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge concerning physics and mathematics (program base for secondary school, basic level). Solving elementary physical problems based on acquired knowledge, ability to acquire information from given sources. Understanding of necessity of own competence broadening, readiness to cooperate within group.

Course objective

Providing students with basic knowledge of physics, to the extent specified by the curriculum content appropriate to the field of study.

Course-related learning outcomes

Knowledge:
The student is able to define the basic physical concepts in the scope covered by the content programs and give simple examples of their use in the surrounding world
The student is able to formulate and explain basic physical laws within the scope covered by the curriculum content appropriate to the field of study, determine basic limitations and the scope of their applicability, and provide examples of their application to describe phenomena in the surrounding

world.

Skills:
The student is able to perform the analysis of the basics physical phenomena.
The student knows how to apply basic physical laws and basic models during problem solutions to the extent covered by the contents relevant to the field of study.
The student is able to use the indicated sources of knowledge with their understanding (list of primary literature) and acquire knowledge from other sources.

Social competences:
The student is able to develop the knowledge in the presented subject.
The student is aware of the meaning of the physics in the engineer development.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Knowledge acquired during the lecture is verified in the examination. The written examination consists of 20 questions. Assessment criteria: <90–100> very good; <80–90) good plus; <70–80) good; <60–70) satisfactory plus; <50–60) satisfactory; <0–50) unsatisfactory.

Knowledge and skills acquired during classes are verified on the basis of a written test conducted during the final class in the semester. The test consists of 5 calculation problems. Assessment criteria: <90–100> very good; <80–90) good plus; <70–80) good; <60–70) satisfactory plus; <50–60) satisfactory; <0–50) unsatisfactory.

Laboratory: credit is awarded on the basis of an oral or written answer concerning the content of each laboratory exercise performed, as well as a report from each laboratory exercise, in accordance with the instructions of the laboratory instructor. The condition for obtaining credit is the successful completion of at least 85% of the laboratory exercises, i.e. obtaining a positive grade for both the answer and the report.

Programme content

Kinematics, dynamics, acoustics, fluid mechanics, gravity, oscillations, basics of electrostatics, electric current.

Course topics

Lecture: kinematics of a material point; dynamics of a rigid body; conservation principles of energy, momentum and angular momentum; laws of dynamics; fundamentals of fluid mechanics, including hydrostatic pressure, the barometric formula, Archimedes' principle, Pascal's law, the hydraulic press, Torricelli's formula, the continuity equation for fluid flow, and Bernoulli's law; gravitation, including Kepler's laws and the law of universal gravitation; oscillatory motion, including simple harmonic, damped and forced oscillations; wave motion, including longitudinal and transverse waves, and superposition of oscillations.

Classes: kinematics of a material point; dynamics of a rigid body; conservation principles of energy and momentum; laws of dynamics; gravitation.

Laboratory: laboratory exercises in mechanics, electromagnetism and optics.

Teaching methods

Lecture: multimedial presentation, animations, movies, discussion.
Exercises: practical exercises, task solving
Laboratory: performing experiments, making a report, discussion, discussion of performed experiments and reports

Bibliography

Basic:
University Physics, vol. 1-3, https://openstax.org/subjects/science
S.Szuba, Ćwiczenia laboratoryjne z fizyki, Wydawnictwo Politechniki Poznańskiej, Poznań 2007

Additional:
Halliday D., Resnick R., Walker J., Fundamentals of Physics

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	62	2,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	63	2,50