COURSE DESCRIPTION CARD - SYLLABUS

Course name
Contemporary physics [S1Trans1>ZFW]

Course

Field of study
Transport

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
15

Laboratory classes
0

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

Basics of mathematics, chemistry and physics, Using literature (textbooks, internet), the ability to perceive lecture content, Awareness of the need to deepen engineering knowledge and its place in everyday life

Course objective

Providing students with basic knowledge of the physical aspects of the functioning of the world around us in the scope defined by the curriculum content appropriate for the field of study.

Course-related learning outcomes

Knowledge:
The student has extended and in-depth knowledge of physics useful for formulating and solving selected technical tasks, in particular for correct modeling of real problems

Skills:
The student is able, when formulating and solving tasks in the field of transport, to apply appropriately selected methods, including analytical, simulation or experimental methods

Social competences:
The student understands that in technology, knowledge and skills very quickly become obsolete
The student is aware of the importance of knowledge in solving engineering problems, knows examples and understands the causes of malfunctioning transport systems that have led to serious financial and social losses or to serious loss of health and even life

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Written credit based on orally asked questions. In case of doubts related to the assessment, an oral exam is allowed.

Programme content

1. Electromagnetic radiation and quanta
2. Wave-particle nature of matter, structure of the atom
4. Nuclear physics, thermonuclear reactions on the Sun
6. Elements of the band theory of solids
7. Physical foundations of laser operation and their use in mechanics
8. Hydrogen, fuel cells and their use in transport
9. High-resolution microscopy

Course topics

In addition to a theoretical introduction to modern physics, specific applications of quantum effects in the broadly understood automotive industry will be presented.

Teaching methods

Multimedia presentation

Bibliography

Basic
1. Paul. A. Tipler - Fizyka współczesna
2. Jerzy Ginter - Wstęp do fizyki atomu, cząsteczki i ciała stałego
Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,00
Classes requiring direct contact with the teacher	15	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	15	0,50