COURSE DESCRIPTION CARD - SYLLABUS

Course name
Physics for computer scientists 2 [N1Inf1>FIZ2]

Course

Field of study
Computing

Year/Semester
2/3

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
part-time

Requirements
compulsory

Number of hours

Lecture
0

Laboratory classes
16

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

1,00

Coordinators

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Lecturers

Prerequisites

Knowledge of mathematics and physics (first semester of first-cycle engineering studies level). Skill in elementary physical problem solving, skill in acquiring information from listed sources. Understanding the necesity of personal competence development.

Course objective

1. Introduction of basic knowledge in physics within the scope of curriculum content specific for the field of study 2. Development of skills in simple problem solving, carying out simple experiments and results analysis 3. Self-education ability development

Course-related learning outcomes

Knowledge:
1. Student, who has completed the course, is able to define basic physics terms within the scope of curriculum content specific for the field of study and give simple examples of their application in real world
2. Student, who has completed the course, is able to formulate and explain basic physics laws within the scope of curriculum content specific for the field of study, explain the range of application and give

examples of their application to real world problems
3. Student, who has completed the course, is able to explain purpose and importance of simplified models in physical phenomena description

Skills:
1. Student, who has completed the course, is able to make use of the listed sources of knowledge (basic literature list) and acquire information from other sources
2. Student, who has completed the course, is able to integrate information acquired during participation in the course, from listed literature and other sources as well as to formulate general conclusions within the scope of the course curriculum content
3. Student, who has completed the course, is able to prepare and carry out standard measurements of basic physical phenomena, identify basic sources of measurement errors
4. Student, who has completed the course, is able to present results of simple physical experiments and perform qualitative and quantitative analysis of these results

Social competences:
1. Student, who has completed the course, is able to actively involve in solving problems, develop and expand personal competence

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

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Laboratory classes - continuous assessment of knowledge of current exercise and ability to make use of the listed literature, performed in written or oral form. Continuous assessment of planning and carrying out standard measurements of basic physical quantities ability with the use of information from the listed literature. Assessment of skill in analysis of measurements and presentation of results in written reports.

Programme content

Mechanics
- kinematics
- rotation of rigid body
- harmonic oscillations, pendulums
- elastic properties of solids
- sound waves
- thermal expansion of solids
- viscosity of liquids

Electromagnetism
- magnetic field
- particle motion in electric and magnetic field
- capacitors
- electromagnetic induction
- conductance of metals and semiconductors
- thermoelectric effect
- magnetic properties of matter
- photoelectric effect

Optics
- dispersion of light
- image formation by a lens
- interference and diffraction
- polarization of light
- optical spectra
- photometry

Teaching methods

Laboratory classes: hands-on experiments with the use of training sets available in the Physics Laboratory, carried out by the students under the university teacher supervision.

Bibliography

Basic
1. D. Halliday, R. Resnick, J. Walker, Podstawy fizyki t 1-5, Wydawnictwo Naukowe PWN, Warszawa 2015
2. S.J. Ling, J. Sanny, W. Moebs i in., Fizyka dla szkół wyższych. Tom 1 - 3, OpenStax Polska, www.openstax.pl
3. S. Szuba, Ćwiczenia laboratoryjne z fizyki, Wydawnictwo Politechniki Poznańskiej, Poznań 2007
Additional
1. J. Massalski, M. Massalska, Fizyka dla inżynierów t.1, Wydawnictwa Naukowo-Techniczne, Warszawa 2006
2. J. Massalski, Fizyka dla inżynierów t.2, Wydawnictwa Naukowo-Techniczne, Warszawa 2006
3. M. Kotłowska, A. Kozak, O pomiarach fizycznych, Wydawnictwo Naukowe Uniwersytetu im. Adama Mickiewicza, Poznań 2008

Breakdown of average student's workload

	Hours	ECTS
Total workload	30	1,00
Classes requiring direct contact with the teacher	16	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	14	0,50