COURSE DESCRIPTION CARD - SYLLABUS

Course name
Physics [N1Eltech1>Fiz1]

Course

Field of study
Electrical 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
part-time

Requirements
compulsory

Number of hours

Lecture
20

Laboratory classes
0

Other
0

Tutorials
12

Projects/seminars
0

Number of credit points

4,00

Coordinators

dr Ewa Chrzumnicka
ewa.chrzumnicka@put.poznan.pl

Lecturers

Prerequisites

Basic knowledge concerning physics and mathematics. 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

Educate students in the basic concepts and physical laws in the field of classical physics, including their applications in technical sciences, develop students "skills to solve problems in the field of technical physics, recognize its potential applications in the studied field, develop students" teamwork skills.

Course-related learning outcomes

Knowledge:
Advanced knowledge within classical mechanics, thermodynamics, gravity and electrical interactionswith special emphasis on their applications in studied subject. Basic knowledge about constructing, principles of working and lifetime of modern engineering systems.

Skills:

Using (with understanding) recommended knowledge sources (catalog data, applications notes) and derive knowledge from other sources for self-education purpose.Carry out and analyze basic physical experiments and measurements on electrical systems with results interpretation and presentation in numerical and graphical forms.

Social competences:
Understanding of role of knowledge in problems solutions and in increasing level ofprofessional, personal and social skills.Ability of logical and enterprising thinking in electrical engineering field.

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:
Oral or written exam that is aimed at students knowledge evaluation based on their explanations of choosen physics problems, current evaluation of students activity
Math exercises:
Substantial evaluation of methods of problem solving: proper physical formula application, logical line of thinking, mathematical efficiency in formula calculations also with numerical data and units, capabilities to solve problems using different methods, clarity and aesthetics of task solutions, current evaluation of students activity

Programme content

1.Classical mechanics.
2. Kinematics Dynamics of forward motion.
3. Kinematics and dynamics of rotary motion
4. Vibrations and waves.
5.Thermodynamic
6. Gravitational interactions:law of universal gravitation,scalar and vector description of gravitational field.

Course topics

1.Movement classification, work, power, potential and kinetic energy, conservativeand non-conservative forces.
2 Dynamics and conservation rules.
3.Momentum of force, momentum, principles of dynamics, principles of conservation.
4.Harmonic free vibrations, forced vibrations (resonance), damping vibrations, description of periodic processes with vector diagrams, mechanical waves.
5.Pressure, temperature, 0 thermodynamics law, heat, heat conduction, 1st law of thermodynamics, elements of kinetic gas theory,gas processes, heat machines, 2nd law of thermodynamics.
6.LThe law of universal gravitation, scalar and vector description of gravitational field.

Teaching methods

Lecture: multimedial presentation, animations, movies.
Math exercises: practical exercises.

Bibliography

Basic
J. Orear, Fizyka, t. 1- 2, WNT, W-wa 1990
2. D.Halliday, R.Resnick, J.Walker, Podstawy fizyki t 1-5, PWN, Warszawa 2005.
3. K.Jezierski, B.Kołodka, K.Sierański, Fizyka. Zadania z rozwiązaniami t 1-2, Oficyna Wydawnicza Scripta, Wrocław 2007
Additional
1.J.Massalski, M.Massalska, Fizyka dla inżynierów t.1-2, WNT, Warszawa 2006
2. e-Fizyka" to internet course z Fizyki AGH : Autors: Zbigniew Kąkol i Jan Żukrowski.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	50	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	50	2,00