

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Physics		Code 1010334111010410037
Field of study Control Engineering and Robotics	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty -	Subject offered in: polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 46 Classes: - Laboratory: 16 Project/seminars: -		No. of credits 8
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art technical sciences		ECTS distribution (number and %) 8 100%
Responsible for subject / lecturer: dr Wanda Polewska email: wanda.polewska@put.poznan.pl tel. 61 665 3195 Faculty of Technical Physics ul.Nieszawska 13a 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Fundamental knowledge of physics: basic level according to the secondary school syllabus, K_W01:knowledge of mathematics including integration and differentiation calculus
2	Skills	Ability to solve elementary problems in physics on the basis of the knowledge acquired, ability to obtain information from recommended sources
3	Social competencies	Readiness to work in a team, understanding of the necessity to extend the level of competence
Assumptions and objectives of the course: -Presentation of fundamental knowledge of physics in the range determined by the syllabus of the subject of study -Development of the ability to solve simple problems, perform simple experiments and analyse/interpret their results on the basis of the knowledge acquired		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Student has a basic knowledge in the following areas of physics: mechanics, electricity, magnetism, optics, selected problems of quantum mechanics and physics of the condensed phase - [[K_W02+++]] 2. Student is able to formulate and explain the fundamental laws in physics within the range determined by the proper syllabus and can identify basic limitations of the laws and their applications for description of phenomena in the real world - [[K_W03+++]]		
Skills: 1. Student is able to use and work with the recommended sources of information (list of the fundamental literature), and also is able to gain knowledge from other sources - [[K_U01+++]] 2. Student knows how to use the fundamental laws of physics and simplified models in solving simple problems within the range determined by syllabus - [[K_U06+]]		
Social competencies: 1. Student understands the need and is ready to develop his competences and advance his knowledge on his own - [[K_K01+++]]		
Assessment methods of study outcomes		

Lecture: pass on the basis of a written exam
 (score scale:
 insufficient- less than 50% of correct answers
 sufficient- 50,1- 60%
 sufficient plus- 60,1 - 70%
 good- 70,1 - 80%
 good plus- 80,1 - 90%
 very good- 90,1 - 100%

Lab: grades from the lab reports and tests, verification of practical skills during experiments concerning selected physical phenomena.

In order to obtain a passing final grade, the completion of at least 85% of the planned laboratory exercises is necessary

Course description

1. Classical mechanics including:
 - kinematics and dynamics of translational motion
 - kinematics and dynamics of rotational motion
 - harmonic vibration free and forced
 - mechanical waves and fundamentals of acoustics
2. Fundamentals of special theory of relativity
3. Electromagnetism:
 - electrostatic field in vector and scalar description
 - electric current
 - magnetostatics
 - electromagnetic induction
 - Maxwell equations
4. Geometric and wave optics
5. Fundamentals of quantum physics:
 - blackbody radiation - Planck law
 - photoelectric effect, Compton effect
 - elementary problems of the structure of atom
 - matter waves
6. Fundamentals of quantum mechanics, Schroedinger equation, quantum numbers
7. Periodic table, creation of chemical bonds, fundamentals of crystallography
8. Selected problems of contemporary physics

Basic bibliography:

1. D.Halliday, R.Resnick, J.Walker, Podstawy Fizyki t 1-5, PWN Warszawa 2004
2. S.Szuba, Ćwiczenia laboratoryjne z fizyki, Wydawnictwo politechniki Poznańskiej, Poznań 2007

Additional bibliography:

1. J.Massalski, Fizyka dla inżynierów, t 1-2, WNT W-wa 1980
2. J.Orear, Fizyka, WNT 1990
3. H.Szydłowski, Pracownia fizyczna, PWN, W-wa 2003

Result of average student's workload

Activity	Time (working hours)	
1. Exam/credit of lecture	35	
2. Preparation to lab experiments	30	
Student's workload		
Source of workload	hours	ECTS
Total workload	130	8
Contact hours	65	5
Practical activities	16	0