

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Physics		Code 1010334211010330037
Field of study Automatic Control 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: 16 Laboratory: - 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 Jarosław Ruczkowski email: jaroslaw.ruczkowski@put.poznan.pl tel. 61 6653228 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	fundamental knowledge of physics and mathematics (program basis for high schools, standard level)
2	Skills	skills in solving elementary problems in physics based on the knowledge possessed, ability to extract information from the recommended sources
3	Social competencies	understanding of the necessity of extending one's competences, readiness to cooperate within a team
Assumptions and objectives of the course: 1. Transfer of fundamental knowledge in physics, within the range defined by the program relevant for the field of study 2. Development of skills in solving elementary problems and performing simple experiments, as well as the analysis of results obtained, based on the knowledge possessed 3. Development of skills in self-study and team work		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. student can define basic physical concepts, within the range covered by program relevant for the field of study, and indicate simple examples of their application in the surrounding world - [K_W02] 2. student can formulate and explain fundamental physical laws, within the range covered by program relevant for the field of study, define general restrictions and the range of their applicability, give examples of their application in phenomena in the surrounding world - [K_W02] 3. student can explain the aim and meaning of simplified models in description of physical phenomena - [K_W02]		
Skills: 1. student can use, with understanding, the recommended sources of knowledge (basic references list), as well as gain knowledge from other sources - [K_U01, K_U05]		
Social competencies: 1. student can get actively involved in solving problems stated, develop and extend his (her) competences unaided - [K_K01]		
Assessment methods of study outcomes		

<p>Lectures : written exam in test form 3.0: 50.1%-60.0% 3.5: 60.1%-70.0% 4.0: 70.1%-80.0% 4.5: 80.1%-90.0% 5.0: from 90.1%</p> <p>Classes : , written test, activity at auditory classes 3.0: 50.1%-60.0% 3.5: 60.1%-70.0% 4.0: 70.1%-80.0% 4.5: 80.1%-90.0% 5.0: from 90.1%</p>	
Course description	
<p>1. Classical mechanics - classification of the modes of motion - kinematics and dynamics of translatory motion (including: laws of dynamics, conservation laws for energy and momentum) - kinematics and dynamics of rotary motion (including: laws of dynamics, conservation law for angular momentum) - harmonic oscillations ? simple and driven (including: resonance phenomenon) - mechanical waves - gravity interactions</p> <p>2. Fundamentals of special relativity</p> <p>3. Thermodynamics - temperature, 0 thermodynamics law - heat and mechanical work, I thermodynamics law - elements of kinetic theory of gases - entropy, II thermodynamics law</p> <p>4. Electromagnetism - electrostatics (including: Gauss law) - electric current - magnetostatics (including: Ampere's law) - electromagnetic induction (including: Faraday's law) - electromagnetic waves (including: energy and momentum, polarization)</p> <p>5. Optics - geometrical optics (including: reflection and refraction laws) - wave optics (including: interference and diffraction)</p> <p>6. Fundamentals of quantum physics - quantum nature of light - wave properties of matter - elementary problems of atomic structure</p> <p>7. Elements of modern physics (short review) - selected problems in atomic, solid state, nuclear and elementary particle physics</p>	
<p>Basic bibliography: 1. D.Halliday, R.Resnick, J.Walker, Podstawy fizyki t 1-5, PWN Warszawa 2003 2. K.Jeziński, B.Kołodka, K.Sierański, Fizyka. Zadania z rozwiązaniami t 1-2, Oficyna Wydawnicza Scripta, Wrocław 3. J.Kalisz, M.Massalska, J.M.Massalski, Zbiór zadań z fizyki, część I i II, Wydawnictwo Naukowe PWN, Warszawa 1987</p>	
<p>Additional bibliography: 1. J.Masalski, Fizyka dla inżynierów t.1-2, WNT Warszawa 1980</p>	
Result of average student's workload	
Activity	Time (working hours)

Student's workload		
Source of workload	hours	ECTS
Total workload	170	8
Contact hours	66	3
Practical activities	0	0