

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Physics		Code 1010134221010410007
Field of study Environmental Engineering Extramural First-	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
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: 32 Classes: 28 Laboratory: - Project/seminars: -		No. of credits 6
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 Technical sciences		ECTS distribution (number and %) 6 100% 6 100%
Responsible for subject / lecturer: dr hab. Grażyna Białek-Bylka, prof. nadzw. email: grazyna.bialek-bylka@put.poznan.pl tel. 61 665-31-85 Faculty of Technical Physics ul. Nieszawska 13A 60-965 Poznań		Responsible for subject / lecturer: dr hab. Grażyna Białek-Bylka, prof. nadzw. email: grazyna.bialek-bylka@put.poznan.pl tel. 61 665-31-85 Faculty of Technical Physics ul. Nieszawska 13A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge in physics and mathematics (basic level of elementary and secondary school)
2	Skills	Skills in solving of elementary problems of physics on the basis of personal knowledge and information from known sources
3	Social competencies	Understanding of the necessity of the broadening of the self -competence and readiness to cooperate in group
Assumptions and objectives of the course: As a result of teaching general physics course at the University of Technology one ought expect good background in physics as outcome giving a base for the logical presentation and understanding technical problems.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. give definitions of the basic physical formulas and examples of their application - [K_W02] 2. explain the basic physical laws and explain conditions for their application - [K_W02] 3. explain the goal and the significance of the models in the explanation of the physical phenomenon?s - [K_W02]		
Skills:		
1. apply the basic physical laws and simple models in the solving of the uncomplicated problems - [K_U01] 2. make plan and perform standard measurements of the basic physical phenomenon and evaluate the conditions disturbing measurement - [K_U01] 3. give quantity and quality analyses of simple physical experiments - [K_U01] 4. formulate simple conclusions on the basis of the calculation results and measurements - [K_U01] 5. use the literature and also other sources of knowledge - [K_U05]		
Social competencies:		
1. actively take part in the solving problems and is independent and capable to extend self-competences - [K_K01] 2. responsible collaborate in the team - [K_K03] 3. behave according to the ethic roles - [K_K02]		

Assessment methods of study outcomes		
<p>W01, W02, W03- written/oral examination, course grading: 3, 4, 5; 50.1%-70.0%, 70.1%-90.0%, from 90.1%, respectively. U01- Test the same grading as examination. U02-U05: laboratory's reports, answer the questions (written and oral): 3, 4, 5; is capable to distinguish between different kinds of errors; also calculate uncertainty more complicated ; is also able to use laboratory equipments, can find information useful for data analysis, respectively. K01- classes and laboratory activity evaluation: 3, 4, 5; moderation engagement in the problem solving; is interested in problem solving; with great enthusiasm is involved in problem solving, respectively. K02: laboratory activity evaluation: 3, 4, 5; capable in group work, is not selfish, able to define problems to be solve by particular members of the group; is able preciously determined problems to be solve by particular members of the group and can coordinate work of all members of the group, respectively.</p>		
Course description		
<p>1) Mechanics: kinetics and dynamics, the law of conservation of energy, gravitational potential energy and escape velocity, power, stable and unstable equilibrium, linear momentum and collisions (momentum and its relation to force, conservation of momentum, elastic and inelastic collisions, center of mass), rotational motion (rotational dynamics, angular momentum and its conservation, rotational kinetics energy). 2) Thermodynamics. 3) Electricity: electric charge & charge conservation, insulators and conductors, Coulomb's law, the electric field (point charge, dipole), motion of a charge particle in an electric field, Gauss' law and its application, electric potential, capacitance and resistance, circuits. 4) Wave and quantum optics: wave nature of light and wave-matter interactions (reflection and refraction, interference, diffraction, polarization), photon theory of light and the photoelectric effect, Compton effect, wave-particle duality, wave nature of matter and de Broglie's hypothesis, laser. 5) Solid state physics: the electric and magnetic properties of solids, insulators, metals and semiconductors, the light-emitting diode and transistor.</p>		
Basic bibliography:		
<p>1. D. Halliday, R. Resnick, J. Walker, "Fundamentals of Physics", J. Wiley & Sons, Inc., New York, Chichester, Brisbane, Toronto & Singapore, 1997.</p>		
Additional bibliography:		
<p>1. D.C. Giancoli, "Physics for Scientists & Engineers", Prentice Hall, Upper Saddle River, New Jersey 07458, 2000</p>		
Result of average student's workload		
Activity	Time (working hours)	
1. Share in the lectures	32	
2. Share in the classes	28	
3. Preparation for classes	24	
4. Preparation for test	6	
5. Consultations	1	
6. Preparation for examination	12	
7. Examination period	3	
Student's workload		
Source of workload	hours	ECTS
Total workload	156	6
Contact hours	66	2
Practical activities	0	0