

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Physics</b>		Code <b>1010321211010430037</b>
Field of study <b>Electrical Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>1 / 1</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>1</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>5 100%</b>
<b>Responsible for subject / lecturer:</b> Miroslaw Szybowicz, PhD email: miroslaw.szybowicz@put.poznan.pl tel. 61 665 3170 Technical Physics ul. Nieszawska 13A 60-965 Poznań		<b>Responsible for subject / lecturer:</b> Adam Buczek, PhD email: adam.buczek@put.poznan.pl tel. 61 665 3175 Technical Physics ul. Nieszawska 13A 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge concerning physics and mathematics (program base for secondary school, basic level)
2	<b>Skills</b>	Solving elementary physical problems based on acquired knowledge, ability to acquire information from given sources
3	<b>Social competencies</b>	Understanding of necessity of own competence broadening, readiness to cooperate within group
<b>Assumptions and objectives of the course:</b>		
1. Hand over basic knowledge concerning physics with special emphasis on applications in technical sciences		
2. Develop student's abilities to solve physical problems, to perceive potential applications in studied subject, doing experiments and analyze results based on acquired knowledge		
3. Mould student's abilities within group cooperation		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Define basic physical terms and quantities with proper units and give examples of their applications in real cases and technical sciences - [K_W03 +++]		
2. Form and explain basic physical laws, define their range of applications with special emphasis on studied subject - [K_W03 +++ K_W12 + K_W16 +]		
<b>Skills:</b>		
1. Apply basic physical laws and simplified models for solving of simple problems and task in range of technical sciences - [K_U10 +]		
2. Carry out and analyze basic physical experiments (by oneself and in group) - [K_U06 +]		
3. Use (with understanding) recommended knowledge sources (basic literature index) and derive knowledge from other sources for self-education purpose - [K_U05 ++ K_U09 ++]		
<b>Social competencies:</b>		
1. Taking active part with problem solving, do their own development and horizons broadening - [K_K01 ++]		
2. Cooperation within group, fulfilling work duties, take responsibility for the results of both own and team work - [K_K03 +]		
<b>Assessment methods of study outcomes</b>		

<p>Lecture:                  Oral or written exam that is aimed at students knowledge evaluation based on their explanations of chosen physics problems, current evaluation of students activity</p> <p>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</p>		
<b>Course description</b>		
<p>Classical mechanics:                  movement classification,                  work, power, potential and kinetic energy, conservative and non-conservative forces,                  kinematics and dynamics of linear and curvilinear motion (dynamics and conservation rules)                  harmonic free vibrations, forced vibrations (resonance), damping vibrations,                  description of periodic processes with vector diagrams,                  mechanical waves,                  Thermodynamics:                  temperature, 2nd thermodynamics law,                  heat, heat conduction,                  1st law of thermodynamics,                  elements of kinetic gas theory,                  gas processes, heat machines, 2nd law of thermodynamics,                  Gravitational interactions:                  law of universal gravitation,                  scalar and vector description of gravitational field,                  Electrical interactions:                  Coulomb law,                  scalar and vector description of electrical field,                  Gauss law,                  electrical conductors (Ohm and Kirchhoff laws),                  electrical properties of matter,                  capacitance</p>		
<b>Basic bibliography:</b>		
<p>1. D.Halliday, R.Resnick, J.Walker, Fundamentals of Physics, Wiley 2009                  2. K.Jeziński, B.Kołodka, K.Sierański, Physics. Problems with solutions, Scripta, Wrocław 2007</p>		
<b>Additional bibliography:</b>		
<p>1. J.Massalski, M.Massalska, Physics for engineers, WNT, Warszawa 2006</p>		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	125	5
Contact hours	60	0
Practical activities	40	0