

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Physics</b>		Code <b>1010601211010410206</b>
Field of study <b>Mechanical Engineering</b>	Profile of study (general academic, practical) <b>general academic</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>4</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b>
<b>Responsible for subject / lecturer:</b> dr Ryszard Skwarek email: ryszard.skwarek@put.poznan.pl tel. 616653187 Faculty of Technical Physics st. Piotrowo 3, 60-965 Poznań		<b>Responsible for subject / lecturer:</b> dr Ryszard Skwarek email: ryszard.skwarek@put.poznan.pl tel. 616653187 Faculty of Technical Physics st. Piotrowo 3, 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Student: has a basic knowledge of physics and mathematics (program basis for high schools, basic level)
2	<b>Skills</b>	Student can obtain information from literature, databases and other sources, is able to solve problems (simple) in physics.
3	<b>Social competencies</b>	Understanding of the need to expand their competence, their willingness to cooperate within the team
<b>Assumptions and objectives of the course:</b>		
Objectives of the course: 1 Provide students with a basic knowledge of physics, to the extent specified by the curriculum relevant to the field of study. 2. Acquisition of the ability to solve problems in physics		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. - has a basic knowledge of physics, (including mechanics, optics, electricity, magnetism )including the knowledge necessary to understand the physical phenomena - [[K1_W02]]		
<b>Skills:</b>		
1. - can obtain the informations from literature, databases and other sources, is able to integrate the informations, make the interpretation of them, as well as draw conclusions and formulate and justify opinions - [[K1_U01, K1_U05]] 2. - is able to work independently and in a team, is able to estimate the time needed for the commissioned tasks, is able to develop and implement a schedule of work to ensure deadlines - [[K1-U08]]		
<b>Social competencies:</b>		
1. - is unconscious of responsibility for his own work and a willingness to comply with the principles of teamwork and sharing responsibility for the implementation of tasks - [[K1_K01, K1_K02]]		
<b>Assessment methods of study outcomes</b>		

<p>Lecture: written and oral          Auditory classes: solving problems in physics, final colloquium</p> <p>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>		
<b>Course description</b>		
<p>kinematics of a material point (linear motion and curvilinear)          dynamics of material point (Newton's principles, friction, momentum, work, power and energy)          rigid body dynamics (force momentum and moment of inertia, Steiner's Theorem, principles of dynamic rotational motion, angular momentum, kinetic energy of rotation)          conservation laws in mechanics (the law of conservation: momentum, angular momentum, energy),          the collision of bodies (perfectly elastic and inelastic) statics of rigid bodies (simple machines)          harmonical vibration (free and forced ? phenomenon of resonance)          mechanical waves (reflection and refraction, phenomena of diffraction and interference, Doppler effect, the basic of acoustics)          gravitational interactions, relativistic mechanics          electric field (Coulomb's law, the intensity and the potential of the electric field, the work force of the electric field)          magnetic field ( Lorentz force, electrodynamic force)          electromagnetic induction (fluxinduction Faraday's law of induction, Lenz's law),          electromagnetic waves (Maxwell equations)</p>		
<p><b>Basic bibliography:</b></p> <p>1. . D. Halliday, R. Resnick, J. Walker, ?Podstawy fizyki? t. I - IV, PWN, Warszawa 2005.          2. . J. Massalski, M. Massalska, ?Fizyka dla inżynierów? t.I, WNT, Warszawa 2006.          3. K. Jezierski, A. Kołodka, K. Sierański, ?Fizyka-zadania z rozwiązaniami?, t. 1-2, Wydawnictwo Scripta, Wrocław 2009          4. J.Kalisz, M. Massalska, J. Massalski. ?Zbiór zadań z fizyki z rozwiązaniami?, PWN, Warszawa 1971.</p>		
<p><b>Additional bibliography:</b></p> <p>1. . Cz. Bobrowski, ?Fizyka - krótki kurs dla inżynierów?, WNT, Warszawa 2004.</p>		
<b>Result of average student's workload</b>		
<b>Activity</b>		<b>Time (working hours)</b>
1. Participation in lectures,		30
2. Participation in auditory classes		15
3. Preparation for auditory classes		25
4. Preparation for exam		32
5. Participation in consultations		3
6. Participation in exam		3
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	108	4
Contact hours	51	2
Practical activities	57	2