

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Applied Mechanics		Code 1010612311010642213
Field of study Transport	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 1
Elective path/specialty Railway Transport	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: 1 Laboratory: - Project/seminars: -		No. of credits 2
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 %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Berdychowski Maciej email: maciej.berdychowski@put.poznan.pl tel. 612244512 Faculty of Transport Engineering ul. Piotrowo 3 60-965 Poznań		Responsible for subject / lecturer: dr inż. Bartosz Wieczorek email: bartosz.wieczorek@put.poznan.pl tel. 61 665 20 42 Faculty of Transport Engineering ul. Piotrowo 3 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has a fundamental knowledge of higher mathematics, physics, theoretical and applied mechanics, strength of materials and base of machines design
2	Skills	Student has abilities to solve analytical problems, can apply knowledge in practical applications of mechanical engineering
3	Social competencies	Student has abilities of a group work, can logically and analytically think during solving problems. Student has abilities to take rational decisions
Assumptions and objectives of the course: Transmitting to the students the knowledge of technical problems solving on the base of mechanic laws		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has a basic knowledge of the mechanics of solids and discrete systems with many degrees of freedom, mathematical modelling of physical and mechanical systems based on the principle of d - [K2A_W02]		
2. Has an extended knowledge of modern construction materials such as plastics, carbon composites, ceramics, in terms of their construction, processing technology and applications - [K2A_W10]		
3. Has an extended knowledge in selected areas of technical mechanics related to the chosen specialization (e.g. soil mechanics). - [K2A_W16]		
4. Has an in-depth knowledge of the design and principles of operation and grading machines from the equipment of the chosen group - [K2A_W18]		
Skills:		
1. . Is able to use a common numerical computations system for programming a simple simulation task with limited degrees of freedom - [K1A_U07]		
Social competencies:		
1. Understands the need for lifelong learning; is able to inspire and organize the learning process of others. - [K2A_K01]		
2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment, is aware of responsibility for decisions - [K2A_K02]		
3. Is able to set priorities for realization of undertaken tasks. - [K2A_K04]		

Assessment methods of study outcomes		
-Examination		
Course description		
-Basics of analytic mechanics, constraints in analytic mechanics and their classification. Moment of inertia tensor, equations of motion, Lagrange's equations. Vibration theory elements, linear systems equations. Dynamic systems analysis and synthesis. Kinematics and dynamics of spherical motion and complex motion, Coriolis forces, gyroscope		
Basic bibliography:		
1. W. Derski; Mechanika techniczna cz. I, Wydawnictwo PP, Poznań 1972		
2. J. Leyko; Mechanika ogólna, PWN, Warszawa 1997		
3. J. Misiak; Mechanika techniczna, WNT, Warszawa 1998		
4. Z. Osiński; Mechanika ogólna, PWN, Warszawa 1997		
Additional bibliography:		
1. R. Scanlan, R. Rosenbaum; Drgania i flatter samolotów, PWN, Warszawa 1964		
2. M. Sperski; Mechanika, Wydawnictwo PG, Gdańsk 2002		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	15	
2. Strengthening the lecture	8	
3. Consultations	5	
4. Preparation to pass the exam	5	
5. Participation in the exam	2	
6. Participation in the exercises	15	
7. Preparation to the exercises	5	
8. Consultations exercise content	2	
9. Preparing to pass the exercises	2	
10. Participation in the test	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	58	2
Contact hours	38	2
Practical activities	0	0