

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Machines		Code 1010604211010640175
Field of study Mechanical Engineering	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: 36 Classes: - Laboratory: - Project/seminars: -		No. of credits 4
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 %) 4 100% 4 100%
Responsible for subject / lecturer: Assoc. Prof. Eng. Ireneusz Malujda email: ireneusz.malujda@put.poznan.pl tel. 61 665-2244 Faculty of Transport Engineering Piotrowo 3 street, 60-965 Poznań		Responsible for subject / lecturer: PhD Eng. Krzysztof Talaśka email: krzysztof.talaska@put.poznan.pl tel. 61 665-2246 Faculty of Transport Engineering Piotrowo 3 street, 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of general mechanics, physics and technical drawing.
2	Skills	Ability of logical and creative thinking, using the Internet and library resources.
3	Social competencies	Understands the need for continuous learning and acquiring new knowledge.
Assumptions and objectives of the course: The role of machines in energy transformation. Classification of machines. The characteristic parameters of the machines.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Has knowledge in physics, including the basics of classical mechanics, optics, electricity and magnetism, solid state physics, quantum and nuclear physics, necessary to understand specialized lectures in the theory of construction materials and materials, theory of machines and mechanisms, the theory of electric drives and mechatronic systems - [M1_W02]		
2. Has basic knowledge of the basics of machine construction and the theory of machines and mechanisms, including mechanical vibrations - [M1_W05]		
3. Has basic knowledge in the field of technical fluid mechanics, i.e. liquids and perfect gases, Newton and non-Newtonian viscous liquids, theory of thermal and flow machines - [M1_W07]		
Skills:		
1. Is able to use computer office packages for editing technical texts, including formulas and tables, technical and economic calculations using a spreadsheet and running a simple relational database - [M1_U03]		
2. He can draw a schematic and a simple machine element in accordance with the principles of technical drawing - [M1_U22]		
Social competencies:		
1. Is ready to critically evaluate your knowledge and content you receive - [M1_K01]		
2. He is ready to responsibly perform professional roles, including: observing the rules of professional ethics and requirements from others, caring about the achievements and traditions of the profession - [M1_K06]		

Assessment methods of study outcomes		
Written exam		
Course description		
Simplified design of the machine records . Hulls and superstructures . Propulsion systems . Working bodies of the machine. Shafts and axles. Spring - types , functions, applications. Bearings , sliding bearings . Seal of bearing . Wheels and gearing - the basic message . Gears friction . Clutch types of functions . Brakes, types , principles of operation. Classification engine . Reciprocating internal combustion engines of two and four-stroke . Construction of crank - piston mechanism and timing . Lubrication and cooling motors. Power supply and exhaust of the engine. Topping engines . Emission of toxic substances - catalysts . Engines, turbines and rocket . Turbine types , the essence of action. Pumps, distribution , construction , principle of operation. Gyms - distribution function of elements. Non-conventional energy equipment . Heat pumps - principle of operation , applications. Construction Technology . Transport machines including heavy working machines and equipment handling . Propulsion systems cranes, jib cranes and conveyors . Motor vehicles , an outline of the construction and function of the basic systems : brake, suspension , drive train.		
Basic bibliography:		
1. Jan Kijewski, Andrzej Miller -Maszynoznawstwo 2. J. Gronowicz - Maszynoznawstwo ogólne 3. J. Łęgiewicz - Poznaj samochód		
Additional bibliography:		
1. Z. Tomaszewski - Wprowadzenie do techniki		
Result of average student's workload		
Activity	Time (working hours)	
1. Participation in the lecture	36	
2. Memorizing the content of the lecture	30	
3. Consultations	2	
4. Preparation for the exam	25	
5. Exam	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	95	4
Contact hours	40	2
Practical activities	0	0