

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Modelling of mechanical systems		Code 1010632221010630413
Field of study Mechanika i budowa maszyn	Profile of study (general academic, practical) (brak)	Year /Semester 1 / 2
Elective path/specialty Gas technology and renewable energy	Subject offered in: English	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: 2 Laboratory: - Project/seminars: -		No. of credits 3
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 %) 3 100% 3 100%
Responsible for subject / lecturer: mgr. Jędrzej Mosiężny email: jedrzej.mosiezny@put.poznan.pl tel. 665 2135 Wydział Maszyn Roboczych i Transportu ul. Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Basic knowledge of mathematics, materials science, mechanics, basics of machine design, theory of machines and strength of materials acquired during the first degree studies.
2	Skills	Basics of vector and tensor analysis, solve simple problems of strength, the ability to solve differential equations.
3	Social competencies	Students are creative and consistent in the implementation of the tasks
Assumptions and objectives of the course: - Learning a new mathematical apparatus necessary in the process of modeling materials and machines (mechanisms), learn the basics of physical and mathematical modeling of construction materials, machinery and equipment, some physical processes. - Learn modeling of entities in CAD systems		
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 - [K2A_W02] - [-] 2. Mathematical modeling of physical and mechanical systems based on the principle of d - [K2A_W02] - [-]		
Skills: 1. He can use the assimilated knowledge of the mechanics of materials of construction for the simulation of mechanical systems, mechanisms and machines. - [K2A_U05] - [-] 2. Is able to assess potential negative impacts for the natural environment and humans, originating from the designed machine or a vehicle from the selected equipment group.- [K2A_U14] - [-]		
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 aware of social role of mechanical engineer, understands the need for and is able to deliver opinions and knowledge in the field of machine design, particularly through the media - [K2A_K06] - [-]		

Assessment methods of study outcomes		
Computer based assesment test, written test		
Course description		
<p>Notes on modeling - a goal of modeling entities in CAD systems The modeling process - stages of modeling scheme. Physical modeling: simplifying assumptions, the physical parameters, examples of physical models. FEM modeling: preprocessing of FEM stress analysis models, notes on mesing, different kind of finite element. Notes on solvers and mathematical proceses within solvers. Postprocessing the results GD&T and GPS in CAD systems Designing of experiments for mechanical entities Notes on quality management, configuration management and documentation management</p>		
Basic bibliography:		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. 1. Participation in the lecture	15	
2. 2. Consultations	2	
3. Fixing the lecture	15	
4. 3. Preparation for the test	4	
5. 4. Exam	2	
6. 5. Participation in exercises	30	
7. 6. Consultations	2	
8. Fixing the classes	8	
9. 7. Preparation for the test	4	
10. 8. Test	2	
Student's workload		
Source of workload	hours	ECTS
Total workload	84	3
Contact hours	53	2
Practical activities	0	0