

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Strength of Materials		Code 1011105231011100134
Field of study Engineering Management - Part-time studies -	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
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: 18 Classes: 14 Laboratory: 6 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		ECTS distribution (number and %)
Responsible for subject / lecturer: Dr inż Piotr Stasiewicz email: piotr.stasiewicz@put.poznan.pl tel. +48(61) 6652044 Faculty of Mechanical Engineering and management ul. Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	The knowledge of fundamentals in mathematics, applied mechanics and statics.
2	Skills	The fundamentals of statics of undeformable bodies.
3	Social competencies	The understanding of the significance of technical sciences and applications.
Assumptions and objectives of the course: The objective of the subject is to deliver the basics of the engineering science in the mechanics of deformable bodies and expanding the abilities of the analytical solution in the mechanics of materials.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Basic knowledge on the cycle of machine life - [[K01-InzA_W01]] 2. Basic knowledge on the life cycle of industrial manufacture - [K04-InzA_W01] 3. Basic knowledge on the methods, tools and materials utilized in the solution of engineering problems in mechanical engineering - [K04-InzA_W02] 4. Knows typical industrial technologies in machine operation - [K07-InzA_W5]		
Skills:		
1. Be able to recognize the project identification and to solve uncomplicated project problems on the structure and operation of machines - [K01-InzA_U6] 2. Be able to apply typical methods of uncomplicated problem solution on the structure and operation of machines - [K01-InzA_U7] 3. Be able to design a simple structure and technology of machine parts and modules, and to design the organization of production units of the first complexity degree - [K01-InzA_U8]		
Social competencies:		
1. Be aware and utilizes technical problems in product creation - [K01_InzAK2]		
Assessment methods of study outcomes		

<p>Forming rating: a) in the field of exercises: on the basis of an assessment of the current progress of the implementation of tasks assessed by written work-tests b) within the scope of laboratories: on the basis of an oral answer c) in the field of lectures: based on the answers to questions about the material assimilated in previous lectures, Summary rating: a) in the field of exercises based on the results of the average partial grades of the forming evaluation b) in the field of laboratories: on the basis of the results of the average partial assessments of the forming assessment and the approved reports c) in the field of lectures: exam in the form of a test. You can take the exam after completing the exercises.</p>		
Course description		
<p>The module program includes the following: External and internal loads, stress and strain. Basic tests of the mechanical properties of materials. Strength condition and generalized Hooke's law. Tension and compression within elastic limits. Statically determinate and indeterminate bar systems. Material failure theories. First and second moments of area. Torsion of bars of circular cross section. Bending of beams. Stresses in beams and differential equation of the elastic line. Statically indeterminate beams. Strain energy methods. Clapeyron's systems, reciprocal theorems. The theorem of Castigliano and the minimum work principle. Strength analysis of plane frames.</p>		
Basic bibliography:		
<ol style="list-style-type: none"> Ostwald M., Podstawy wytrzymałości materiałów, Wydawnictwo PP, Poznań, 2007. Ostwald M., Wytrzymałość materiałów. Zbiór zadań. Wydawnictwo PP, Poznań, 2008. Badania eksperymentalne w wytrzymałości materiałów. Pod redakcją S. Joniaka, WPP. 2006. Misiak J., Mechanika techniczna t.1, WNT, Warszawa, 1998, 2012. 		
Additional bibliography:		
<ol style="list-style-type: none"> Magnucki K., Szyk W., Wytrzymałość materiałów w zadaniach: pręty, płyty i powłoki obrotowe, Wydawnictwo Naukowe PWN, 2000. Dyląg Z., Jakubowicz A., Orłoś Z., Wytrzymałość materiałów t.1 i 2, WNT, Warszawa, 2000. 		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	18	
2. Exercises	14	
3. Laboratories	6	
4. Consultations	5	
5. Preparation to exercises and laboratory	13	
6. Passing tests	4	
Student's workload		
Source of workload	hours	ECTS
Total workload	60	4
Contact hours	47	3
Practical activities	20	1