

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Strength of Materials		Code 1011101331011000134
Field of study Engineering Management - Full-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) full-time	
No. of hours Lecture: 30 Classes: 15 Laboratory: 15 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		ECTS distribution (number and %)
Responsible for subject / lecturer: prof. dr hab. inż. Jerzy Zielnica email: jerzy.zielnica@put.poznan.pl tel. +48(61) 6652319 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>Evaluation mark: a) Exercises: Current evaluation of problem solution progress evaluated by tests. b) Lectures: On the basis of answers on the questions of the related material delivered during foregoing lectures. Final grade: a) Exercises: On the basis of average mark of the semestral marks. b) Lectures: A final test; a student who obtained a positive mark on exercises can access the final exam.</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:		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	30	
2. Exercises	15	
3. Laboratories	15	
4. Consultations	10	
5. Preparation to exercises and laboratory	16	
6. Passing tests	6	
Student's workload		
Source of workload	hours	ECTS
Total workload	92	3
Contact hours	76	2
Practical activities	30	1