SYLLABUS

Name: ***Technical Mechanics (ZIPAOZ>SI2TM19O)***
Name in Polish:
Name in English: ***Technical Mechanics***

Information on course:

Course offered by department: Faculty of Organization and Management
Course for department: Silesian University of Technology

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma.polsl.pl/roz/course/view.php?id=448

Short description:

The main purpose is to deliver basic knowledge in the range of calculations in mechanics in designing components of technical means (machines and devices). Basic on this knowledge student will be able to solve problems connected with engineering mechanics and strenght of materials. This purpose will be achevied by getting acquainted with theoretical basics and methods and techniques of calculation supporting designing of technical means. Their practical utilization at classess and laboratories let to make contact with members of team in company, whose effect will be a design of technical mean and its conceptions will be elaborated basing on executed strenght calculations.

Description:

Lecture
1. Fundamentals of mechanics
2. Planar convergent and discrepant forces system
3. Internal forces
4. Friction
5. Elements of planar mass geometry
6. Basics definitions of the theory of the strength of materials.
7. Hook's Law.
8. Stretching and squeezing of rod.
9. Beam bending.
10. Statically indeterminate systems
Classes
1. Flat convergent and divergent force system
2. Internal forces
3. Geometry of massess.
4. Tension and compression of the rod
5. Beam bending
Laboratories
1. Testing the basic mechanical properties of machine elements under test conditions: static stretching, hardness and impact resistance.
2. Fatigue tests.
3. Strain gauge measurements of deformations of machine elements.
4. Solving selected problems in plane mass geometry.
5. Verification of calculations of load states and deformations of machine elements using analytical methods (e.g. reactions, internal forces) and the finite element method.

Bibliography:

1. Hendzel Z., Żylski W.: General mechanics. Statics. Oficyna Wydawnicza Politechniki Rzeszowskiej, Rzeszów 2016.
2. Sawhney G. S.: Mechanics and strength of materials. PHI Learning Private Limited, Delhi 2015.

Learning outcomes:

Knowledge
He/she knows and understands:
K1A_W01: advanced issues in the field of mathematics, physics, statistics and areas of engineering and technical sciences useful for formulating and solving typical engineering tasks.

Skills
He/she is able to:
K1A_U1: identify, formulate and solve complex and unusual engineering problems related to the field of management and production engineering by applying the principles of engineering, science and mathematics, as well as perform tasks under conditions that are not fully predictable.

Social competence
He/she is ready for:
K1A_K1: Critical evaluation of knowledge and received content, recognition of the importance of knowledge in solving cognitive and practical problems, and consulting experts in the event of difficulties in solving problems on their own.

Assessment methods and assessment criteria:

The form and criteria of passing the lecture:
• passing the lecture is based on a positive grade in the written test.
• the condition for a positive evaluation is obtaining a minimum of 2.51 points out of 5 possible points (a student may receive a maximum of 1 point for the answer to each question).
• it is possible to improve the test twice and it is done in writing.

The condition for passing the classess is a positive mark from the test (the test consists of 14 questions, for each of them the student can receive a maximum of 10 points. Passing is possible if the number of points is greater than or equal to 80). Retake credit may be carried out twice on the basis of which the credit is given in the first term.

The condition for passing the laboratories is a positive grade from 3 reports.

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (ZIPAOZ>SI-2-19-O)	2020/2021-L	

Course credits in various terms:

Management and Production Engineering, full-time first degree engineering studies 7 sem. (ZIPAOZ-SI7)			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	5	2020/2021-L	