POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Technical mechanics [S1ETI1>MT2]

Course

Field of study	Year/Semester
Education in Technology and Informatics	2/3
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	30	0
Tutorials	Projects/seminars	
15	0	

Number of credit points

5,00

Coordinators	Lecturers
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Prerequisites

Basic knowledge of physics and mathematics, vector calculus, calculus

Course objective

Providing students with basic knowledge of engineering mechanics, in the field of statics, kinematics and dynamics, which will enable them to study further subjects

Course-related learning outcomes

Knowledge:
student has knowledge in physics, covering the basics of classical mechanics, necessary to understand issues in the field of materials science, theory of machines and mechanisms, theory of drives and mechatronic systems,
has basic knowledge of the main areas of technical mechanics: statics, kinematics and dynamics of the material point and rigid body.

Skills:
student has the ability to self-study using modern teaching tools, such as remote lectures, websites,

databases, e-books, etc.
is able to obtain information from literature, the internet, databases and other sources, is able to integrate obtained information, interpret and draw conclusions from it
can create a free-body diagram, select elements and perform basic calculations of the mechanical system.

Social competences:
student is able to properly set priorities for implementation of the task specified by himself or others based on available knowledge,
understands the need for critical assessment of knowledge and continuous education
is aware of the importance and understands the non-technical aspects and effects of engineering activities, including its impact on the environment, and the associated responsibility for decisions made.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Lecture: written egzam verifying proper understanding of the concepts of engineering mechanics (9 theoretical questions and 4 problems to solve)
Tutorials: tests and assessment of classroom activity

Programme content

Kinematics including: kinematics of a rigid body, complex motion, linkage with sliding contact.
Dynamics: equation of motion of the matierial point and the rigid body, tensor of inertia, vibration of the one degree of freedom system, mathematical and physical pendulum, momentum, moment of momentum, energy, work, power, field of forces

Teaching methods

Lecture: multimedia presentation illustrated by the examples given on the blackboard
Tutorial: solving of the mechanical problems on the blackboard, discussion

Bibliography

Basic
1. J. Leyko, Mechanika ogólna, t. 1 i 2, PWN, Warszawa, 2000
2. M. Lunc, A. Szaniawski, Zarys mechaniki ogólnej, PNW, Warszawa, 1959
3. M.E.Niezgodziński, T.Niezgodziński, Zbiór zadań z mechaniki ogólnej, PWN, Warszawa, 1998
5. J. Misiak, Zadania z mechaniki ogólnej, t. 1, 2 i 3, WNT, Warszawa, 1992
6. J. Nizioł; Metodyka rozwiązywania zadań z mechaniki, WNT, Warszawa, 2002
Additional
1.A.Bedford, W.Fowler, Engineering Mechanics – Dynamics,Prentice Hall, 2002
2.R.C.Hibbeler, Engineering mechanics – Dynamics, PEARSON, 2013

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	65	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	60	2,00