COURSE DESCRIPTION CARD - SYLLABUS

Course name

Engineering mechanics I

Course

Field of study

Construction and Exploitation of Means of Transport

Year/Semester

1/2

Area of study (specialization)

Profile of study

general academic

Level of study

First-cycle studies

Course offered in

polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

18

Laboratory classes

0

Other (e.g. online)

Tutorials

18

Projects/seminars

0

Number of credit points

4

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Maciej Tabaszewski

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Faculty of Mechanical Engeenering

ul. Piotrowo 3 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Basic knowledge of mathematics in the field of vector, differential and integral calculus and physics in the field of mechanics

The ability to think logically and creatively, to use internet and library resources

The student understands the need for continuous learning and gaining new knowledge

Course objective

Presentation of the basics of statics, kinematics, enabling further study of issues in the field of the basics of machine construction, theory of machines and mechanisms and mechanics of materials.

Course-related learning outcomes

Knowledge

The student has a basic knowledge of the main divisions of engineering mechanics: statics, kinematics

Skills

The student is able to obtain information from literature, internet, databases and other sources. The student can integrate the obtained information, interpret and draw conclusions from it. The student is able to use learned mathematical theories to create and analyze simple mathematical models of machines and their elements as well as simple technical systems.

Social competences

The student recognizes the importance of knowledge in solving cognitive and practical problems

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Passing the lecture on the basis of a test

Passing exercises on the basis of systematic tests

Programme content

Selected problems from vector algebra. Axioms of statics. Supports and their reactions. The rigid fixing. Friction and the laws of friction,sliding friction, rolling friction, friction of elastic belts. Convergent system of forces: reduction of the system, equilibrium conditions, theorem of three forces. A couple of forces. A system of forces: reduction of the system, equilibrium conditions. Distributed force systems. Special cases of a system of forces. Statically determinate and statically indeterminate systems. Flat trusses. Static moments. Centers of gravity of solids, surfaces and lines. Kinematics of point, equations of motion, velocity and acceleration. Movement of a point in the Cartesian, natural and polar coordinate systems. Velocity and acceleration of a body. Special cases of general body motion: translational, parallel to a fixed plane, motion with a fixed point, and rotation of a rigid body about a fixed axis. Relative point motion.

Teaching methods

Lectures: multimedia presentation with theory and examples

Classes: problem solving

Bibliography

Basic

1. Sałata W., Mechanika ogólna w zarysie, Poznań, Wyd. PP 1998.
2. Leyko J., Mechanika ogólna. T. 1, Warszawa, PWN 2008.
3. Misiak J., Mechanika ogólna. T. I , Warszawa, WNT 1995.

4. Misiak J. Zadania z mechaniki ogólnej. Część I i II, Warszawa, WNT 1994.

5. Nizioł J. Metodyka rozwiązywania zadań z mechaniki. Warszawa, WNT 2002.

6. Mieszczerski I. W., Zbiór zadań z mechaniki. Warszawa, PWN 1969.

Additional

1. Osiński Z. Mechanika ogólna. Warszawa, PWN 2000.

2. Awrajcewicz J. Mechanika techniczna, Warszawa WNT 2009

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	4,0
Classes requiring direct contact with the teacher	60	2,0
Student's own work (literature studies, preparation for classes, preparation for tests) [1]	60	2,0

[1] delete or add other activities as appropriate