



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Engineering mechanics II

Course

Field of study

Construction and Exploitation of Means of Transport

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

Tutorials

15

Projects/seminars

0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Maciej Tabaszewski

Responsible for the course/lecturer:

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Faculty of Mechanical Engineering

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Prerequisites

Basic knowledge of mathematics in the field of vector, differential and integral calculus as well as engineering mechanics mechanics in the field of statics and kinematics

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

Expanding students' knowledge of dynamics. Obtaining theoretical knowledge and practical skills necessary to study mechanics of materials in terms of dynamic loads, basics of machine construction, machine dynamics and the theory of mechanical vibrations.



Course-related learning outcomes

Knowledge

The student has an ordered basic knowledge of the dynamics of a material point and a rigid body.

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, structures and dynamic phenomena.

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 an written exam

Passing exercises on the basis of systematic tests

Programme content

Two basic problems of dynamics. D'Alembert's principle. Moments of inertia. Vibrations of a one degree of freedom system . Work, power, kinetic and potential energy. Theorems of conservation. Theorem of kinetic energy and work. Dynamics of relative point motion. The momentum of a point, system of points and a rigid body. Angular momentum of material point and rigid body. The principle of momentum, the principle of conservation of momentum. Center of mass motion. Dynamics of the rigid body. Dynamic reactions of the fixed axis of rotation. Variable mass system movement .

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. 2, Warszawa, PWN 2008.
3. Misiak J., Mechanika ogólna. T. II , Warszawa, WNT 1995.
4. Misiak J. Zadania z mechaniki ogólnej. Część III, 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
3. Arczewski K. Drgania układów fizycznych, Warszawa, Wyd. PW. 2008
4. Szcześniak W. Dynamika teoretyczna w zadaniach dla dociekliwych, Warszawa, Wyd. PW. 2010

Breakdown of average student's workload

	Hours	ECTS
Total workload	80	3,0
Classes requiring direct contact with the teacher	40	1,5
Student's own work (literature studies, preparation for classes, preparation for tests) ¹	40	1,5

¹ delete or add other activities as appropriate