



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Methodology of constructing working machines

### Course

Field of study

Mechanical and Automotive Engineering

Area of study (specialization)

Heavy duty machinery

Level of study

First-cycle studies

Form of study

part-time

Year/Semester

4/7

Profile of study

general academic

Course offered in

Polish

Requirements

elective

### Number of hours

Lecture

27

Laboratory classes

9

Other (e.g. online)

0

Tutorials

9

Projects/seminars

0

### Number of credit points

5

### Lecturers

Responsible for the course/lecturer:

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tel. 61-6652225

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

### Prerequisites

Knowledge: Has basic knowledge of the construction and operation of working machines

Skills: Can use office software and basic CAD software

Social competences: Has basic communication skills and teamwork

### Course objective

Systematizing general knowledge about construction and practicing how to use it to solve construction tasks on specific examples from working machines.



### Course-related learning outcomes

#### Knowledge

Has basic knowledge of the basics of machine design and the theory of machines and mechanisms, including mechanical vibrations.

Has elementary knowledge of the life cycle of machinery, recycling of machine elements and construction and consumables.

Has basic knowledge of law, in particular security, copyright and security law, industrial property and its influence on the development of technology.

#### Skills

Can perform basic functional and strength calculations of machine elements such as traction, gear, friction, bearings, rolling and sliding gears, clutches, brakes.

Can perform strength calculations of simple frames and load-bearing structures of machines using elementary strength theories.

Can prepare a technical descriptive and drawing documentation of an engineering task.

#### Social competences

Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in case of difficulties in solving the problem on its own.

Is ready to fulfill social obligations and co-organize activities for the benefit of the social environment.

Is willing to think and act in an entrepreneurial manner.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Written exam consisting of a set of descriptive questions, a credit for classes, a project for laboratory classes

### Programme content

Design strategies. Ways of reaching solutions to structural problems. Cardinal and specific design principles, the structure of a typical design process. The course of the construction process - constructor's tasks. Basic construction evaluation criteria.

### Teaching methods

1. Lecture with multimedia presentation
2. Eternals- solving problems
3. Laboratories - project

### Bibliography



Basic

1. Dietrich M. i inni: Podstawy konstrukcji maszyn t. I, PWN Warszawa 1986
2. Dziama A.: Metodyka konstruowania maszyn, PWN, Warszawa, 1985
3. Osinski Z., Wróbel J.: Teoria konstrukcji maszyn, PWN Warszawa 1982.

Additional

1. Tarnowski W. Optymalizacja i polioptymalizacja w technice, Koszalin, 2011
2. Praca Zbiorowa red. Jan Szlagowski. Automatyzacja pracy maszyn roboczych. Metodyka i zastosowani

**Breakdown of average student's workload**

	Hours	ECTS
Total workload	125	5,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	80	3,0

<sup>1</sup> delete or add other activities as appropriate