



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Tractors and mobile machines

### Course

Field of study

Mechanical and Automotive Engineering

Year/Semester

3 /6

Profile of study

general academic

Course offered in

Polish

Requirements

elective

Area of study (specialization)

Heavy duty machinery

Level of study

First-cycle studies

Form of study

full-time

### Number of hours

Lecture

15

Laboratory classes

30

Other (e.g. online)

Tutorials

0

Projects/seminars

-

### Number of credit points

3

### Lecturers

Responsible for the course/lecturer:

dr inż. Konrad Włodarczyk

Responsible for the course/lecturer:

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### Prerequisites

Knowledge: The student has basic knowledge of the theory of mechanisms, strength of materials, material engineering, technical mechanics and mechanics of dispersed media.

Skills: The student is able to obtain information from the literature on the current state of technology development in the field of construction and operation of agricultural machines.

Social competences: The student is able to cooperate in a group and shows independence in solving problems, acquiring and improving the acquired knowledge and skills.

### Course objective

The role and importance of working machines in technology. Knowledge of construction, principles of operation of working machines, with particular emphasis on earthmoving machines. Classification and



systematics of working machines. Working machines used in agriculture and road construction. Construction, principle of operation and adjustment of working units of complex agricultural machines, earthmoving and road works machines. Determination of efficiency and rules of their use.

### Course-related learning outcomes

#### Knowledge

Is aware of the latest trends in machine construction, i.e. automation and mechatronization, automation of machine design and construction processes, increased safety and comfort of operation, the use of modern construction materials.

Has elementary knowledge of the impact of machinery and technology on the natural environment and global energy balances.

Has elementary knowledge of the economics and economics of industrial enterprises, banking system, commercial law, and entrepreneurial accounting.

#### Skills

Can search in catalogs and on manufacturers' websites ready-made machine components to be used in his own projects.

Can competently advise on the selection of a machine for a given application in the industry covered by the selected diploma path based on the acquired knowledge about a given group of machines.

Can design the technology behind a simple machine element as well as the technology for assembling and disassembling a machine.

#### 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 willing to think and act in an entrepreneurial manner.

Is ready to fulfill professional roles responsibly, including:

- observing the rules of professional ethics and requiring this from others, - caring for the achievements and traditions of the profession.

### Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Partial grades:

Assessment of student activity during lectures.

Summative assessment:

Assessment taking into account the activity of students during the classes and a written exam on the material



## Programme content

General construction of machines for soil treatment with particular emphasis on agricultural machinery also used in road construction. Solutions of systems of working units and running gear. Machine construction diagrams, i.e. harrows, cultivators, plows, seeders, mowers, rollers.

Construction of hydraulic systems. Application and methods of use of the above-mentioned machines.t.

## Teaching methods

1. Lecture with multimedia presentation
2. Exercises - solving problems

## Bibliography

### Basic

1. Kanafojski C., Karwowski T.: Teoria i konstrukcje maszyn rolniczych. Wyd. PWRiL, Warszawa, 1972.
2. Gach S., Miszczak M., Waszkiewicz C.: Projektowanie maszyn rolniczych. Wyd. SGGW-AR, Warszawa, 1989.
3. Brach J.: Koparki jednonaczyniowe. Wyd. WAT, Warszawa, 1985.
4. Brach J.: Maszyny ciągnikowe do robót ziemnych. Wyd. WNT, Warszawa, 1986.

### Additional

1. Dudczak A.: Koparki. Teoria i projektowanie. Wyd. WNT, Warszawa, 2000.
2. Konopka S.: Podstawy budowy i eksploatacji maszyn inżynieryjno-budowlanych. Wyd. WAR, Warszawa, 2002.

## Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,0
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>	30	1,0

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