



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Theory of Working Machines

		Course
Field of study		Year/Semester
Construction and Exploataion of Means of Transport		3/5
Area of study (specialization)		Profile of study
Machines		general academic
Level of study		Course offered in
First-cycle studies		Polish
Form of study		Requirements
full-time		compulsory

		Number of hours
Lecture	Laboratory classes	Other (e.g. online)
45	0	0
Tutorials	Projects/seminars	
0	-	
<b>Number of credit points</b>		
4		

		Lecturers
Responsible for the course/lecturer:		Responsible for the course/lecturer:
dr hab. inż. Jaroslaw Selech prof. PP		dr inż. Konrad Włodarczyk
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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

1. Knows the basic concepts of the construction and operation of agricultural machinery.
2. He knows the structure, principle of operation and regulation of working units of complex agricultural machines.
3. Knows the basic concepts of the construction and operation of working machines.
4. Knows the construction, principle of operation and regulation of working units of complex working machines.s

#### Skills

1. He can classify the division of agricultural and working machines.
2. Is able to evaluate the applied design solutions and their impact on the parameters and working possibilities of the above-mentioned machines.
3. Can select a set of appropriate machines for a given technological process.

#### Social competences

1. The student understands the need and knows the possibilities of continuous training, knows the need to acquire new knowledge for professional development.
2. He can think and act in an entrepreneurial way, make decisions, act for the development of the employer and society.
3. Is aware of transferring the acquired knowledge to the public, makes efforts to make the information understandable.

### 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	98	4,0
Classes requiring direct contact with the teacher	58	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) <sup>1</sup>	29	2,0

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