COURSE DESCRIPTION CARD - SYLLABUS

Course name
Tractors and mobile machines [S1MiBP1>CiMM]

Course

Field of study
Mechanical and Automotive Engineering

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
30

Other
0

Tutorials
0

Projects/seminars
0

Number of credit points

3,00

Coordinators

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Lecturers

Prerequisites

Prerequisites in terms of knowledge, skills, social competence: 1 Knowledge: Has a basic knowledge of the basics of machine design and technical mechanics and technical drawing. Has a basic mathematical background in algebra. 2 Skills: Can read technical drawings and diagrams. Can read and understand technical texts in English. 3 Social Competencies. Has basic interpersonal communication skills.

Course objective

To provide basic knowledge of the construction, operation and design varieties of agricultural tractors. In addition, the goal is to discuss basic information about the construction of the main units of an agricultural tractor (engine, transmission system, suspension system, running gear, steering system, electrical system, including lighting, hydraulic system) and trends in robotization and automation of agriculture.

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:

Lecture - written course credit in the last class. Passing threshold according to PP study regulations, above 50% of the maximum number of points. 4 open-ended questions, each scored from 0 to 1 point. Passing threshold 2.01 pts/4.0.
Individual grades - lecture credit:

3.60 - 4.0 pts very good 5.0
3.20 - 3.59 good plus 4.5
2.80 - 3.19 good 4.0
2.40 - 2.79 satisfactory plus 3.5
2.01 - 2.39 satisfactory 3.0
0 - 2.00 unsatisfactory 2.0

Laboratories - individual lab reports with requirements provided by the instructor. All reports must be passed with a passing grade (3.0 and above). The threshold for passing a report above 50% of the maximum number of points possible per report. The final grade is the average of the grades of the individual reports.

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.

Course topics

1. Basic information about tractors, division of tractors, general construction.
2. Selected systems of agricultural tractors - construction (technical conditions) of power transmission, running gear, suspension, steering, electrical, lighting and tires.
3. Engines used in agricultural tractors/machinery.
4. Power hydraulics of tractors and agricultural machinery.
5. Automation and robotization of agriculture - mobile tractors.
6. Maintenance and repair technology of agricultural machinery.

Teaching methods

1. Lecture with multimedia presentation

2. Laboratories - away classes carried out at the sites of tractor and agricultural machinery manufacturers

Bibliography

Basic
1. Skrobacki A., Ekielski A.: Pojazdy i ciągniki rolnicze. Wydawnictwo Wieś jutra, Warszawa 2006.
2. Skrobacki A.: Pojazdy rolnicze. Wydawnictwo Szkolne i Pedagogiczne, Warszawa 1996.
3. Sikora Z.: Kombajny Zbożowe. Budowa, działanie, użytkowanie, obsługa. Wydawnictwo KaBe, Krosno 2013.
4. Kuczewski J., Waszkiewicz Cz.: Mechanizacja rolnictwa. Tom II Maszyny i urządzenia do produkcji roślinnej i zwierzęcej. Wydawnictwo SGGW, Warszawa 1996.
5. Chomik Z.: Obsługa i naprawa pojazdów rolniczych. Wydawnictwo KaBe, Krosno 2022.
6. Kuczewski J.: Budowa i regulacja maszyn rolniczych. Państwowe Wydawnictwo Naukowe. Warszawa-Poznań, 1981.

Additional
1. Konopka S.: Podstawy budowy i eksploatacji maszyn inżynieryjno-budowlanych. Wyd. WAR, Warszawa, 2002.

Breakdown of average student's workload

	Hours	ECTS
Total workload	75	3,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	30	1,00