



SZKOŁA GŁÓWNA
GOSPODARSTWA
WIEJSKIEGO

Agricultural Engineering Management in Field and Animal Production

Educational subject description sheet

Basic information

Field of study Course Offer for exchange students - second cycle studies, including uniform master studies (MA programmes)		Didactic cycle 2024/25	
Speciality -		Subject code PWMPWM2S_D.B100000.06425.24	
Organizational unit Course Offer for exchange students		Lecture languages english	
Study level second cycle studies, including uniform master studies (MA programmes)		Mandatory Elective subjects	
Study form full-time studies		Block Basic subjects	
Education profile General academic		Disciplines	
Coordinator	Marek Gaworski		
Teacher	Marek Gaworski		
Period Winter semester	Examination Pass with grade	Number of ECTS points 4	
	Activities and hours Lecture: 20 Laboratory exercises: 8 Field exercises: 2		

Goals

Code	Goal
C1	The main aim of the course is to present trends in the management of agricultural engineering on the example of some technical solutions used in plant and animal production.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge - Student knows and understands:			
W1	Student knows and understands the basic methods, techniques and technologies as well as tools and materials allowing for the maximization of yield and its quality in conditions farming.		Oral credit
W2	Student has a basic knowledge of the rational selection of farm equipment and its evaluation in operational and economic terms.		Written credit
W3	Student has general knowledge of the housing systems of various groups of livestock and the necessary equipment.		Report
Skills - Student can:			
U1	Student can acquire knowledge in the field of organic farming from various sources, analyze information and apply for practical use.		Oral credit
U2	Student identifies and analyzes phenomena and interactions between the achievements of natural sciences, especially in the field of plant and animal production.		Oral credit
Social competences - Student is ready to:			
K1	Student is aware of the importance of social, professional and ethical responsibility for agricultural production of high-quality raw materials, animal welfare and shaping and condition of the natural environment using specialized technical equipment.		Oral credit, Report

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	General information about Poland, Polish agriculture and conditions for the development of plant and animal production.	W1, W2, W3, U1, U2, K1	Lecture
2.	The role of modern technical devices in the sustainable development of plant and animal production technologies The role of modern technical devices in the sustainable development of plant and animal production technologies.	W2, U1, K1	Lecture
3.	Management of engineering potential in the area of soil cultivation.	W1, W2, U1, K1	Lecture
4.	Management of engineering potential in the area of natural and mineral fertilization.	W1, W2, U1, K1	Lecture
5.	Management of engineering potential in the area of sowing and planting plants.	W1, W2, U1, K1	Lecture
6.	Management of engineering potential in the area of mechanical care and chemical protection of cultivated plants.	W1, W2, U1, K1	Lecture

No.	Course content	Subject's learning outcomes	Activities
7.	Management of engineering potential in the area of harvesting various crops grown in field conditions.	W1, W2, U1, K1	Lecture
8.	Specific interactions between technical equipment and animals, especially dairy cows, taking into account the results of research and observations.	W3, U2, K1	Lecture
9.	Conditions for improving animal welfare, including some ethical aspects.	W3, U2, K1	Lecture
10.	A vision of an ideal farm with livestock production; an innovative approach to the implementation of technical and technological progress in animal production for some countries in Europe and North America.	W3, U2, K1	Lecture
11.	Study trip to a University dairy farm combined with making observations needed to prepare a report on animal welfare.	W3, U2, K1	Field exercises
12.	Selection (based on energy balance) of a tractor for cooperation with various groups of agricultural machines and tools.	W1, W2, U1	Laboratory exercises
13.	Calculation of fuel consumption of a tractor aggregated with machines in field production.	W1, W2, U1, U2	Laboratory exercises
14.	Calculation of work efficiency indicators of agricultural machines used in field crop production.	W1, W2, U1, U2	Laboratory exercises
15.	Calculation of the demand for equipment (tractors and agricultural machines) in field crop production.	W1, W2, U1, U2	Laboratory exercises

Course advanced

Activities	Methods of conducting classes
Lecture	Lecture
Laboratory exercises	Case study
Field exercises	Observation

Activities	Examination method	Percentage
Lecture	Oral credit	40%
Laboratory exercises	Written credit	30%
Field exercises	Report	30%

Activities	Credit conditions
Lecture	The learning outcomes achieved will be verified on an ongoing basis, based on discussions with students during the classes.
Laboratory exercises	Students' homework with tasks to be solved will be verified and checked.
Field exercises	Students will prepare a report based on the farm visit, where they will include their reflections related to observations of the conditions of keeping dairy cattle and maintaining animal welfare.

Literature

Obligatory

1. Bell B. 2013. The Illustrated Encyclopedia of Tractors & Farm Machinery.
2. Mehta M.L., Verma S.R., Misra S.K., Sharma V.K. 2005. Testing and Evaluation of Agricultural Machinery.
3. Webster J. 2012. Animal Husbandry Regained; The place of farm animals in sustainable agriculture.

Optional

1. Grandin T., Johnson C. 2009. Animals Make us Human: Creating the Best Life for Animals.
2. Skliar O., Grigorenko S., Boltianska N. 2021. Technical means for mechanization of technological processes on livestock farms.
3. Diao X., Silver J., Takeshima H. 2016. Agricultural mechanization and agricultural transformation (Vol. 1527). Intl Food Policy Res Inst.
4. Pingali P. 2007. Agricultural mechanization: adoption patterns and economic impact. Handbook of agricultural economics, 3, 2779-2805.
5. Gaworski M. 2021. Implementation of technical and technological progress in dairy production. Processes, 9(12), 2103, 1-21.

Calculation of ECTS points

Activity form	Activity hours*
Lecture	20
Laboratory exercises	8
Field exercises	2
Preparing a report	20
Preparation for exercises	30
Self-study on the content covered in class	20
Student workload	Hours 100
Number of ECTS points	ECTS 4

* hour means 45 minutes