Appendix No. 1.5 to the Resolution No. 61/2025
of the Rector of the University of Rzeszów

SYLLABUS

REGARDING THE QUALIFICATION CYCLE FROM 2026/2027 TO 2029/2030
ACADEMIC YEAR 2027/2028

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	**Agroecology**
Course/Module code *	
Faculty (name of the unit offering the field of study)	Faculty of Technology and Life Sciences
Name of the unit running the course	Institute of Agricultural Sciences, Land Management and Environmental Protection
Field of study	agriculture
Qualification level	first-degree
Profile	general academic
Study mode	stationary
Year and semester of studies	year 2, semester 3
Course type	major
Language of instruction	English
Coordinator	dr inż. Paweł Wolański
Course instructor	dr inż. Paweł Wolański dr inż. Krzysztof Rogut

* - as agreed at the faculty

1.1. Learning format – number of hours and ECTS credits

Semester (no.)	Lectures	Classes	Laboratories	Seminars	Practical classes	Internships	others	**ECTS credits**
3	15	-	-	30	-	-	-	3

1.2. Course delivery methods
x- **conducted in a traditional way**
- involving distance education methods and techniques

1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)
lecture – graded credit, laboratory classes – graded credit

2. PREREQUISITES

Natural Science Foundations of Agriculture, Soil Science, Agricultural Chemistry, Agrometeorology, Environmental Protection

3. OBJECTIVES, LEARNING OUTCOMES, COURSE CONTENT, AND INSTRUCTIONAL METHODS

3.1. Course/Module objectives

O1	Systematizing fundamental knowledge regarding the impact of environmental factors on the productivity of agricultural ecosystems and the interactions occurring between organisms in meadow and field biocenoses.
O2	To familiarize students with the ecology and economic importance of field and meadow ecosystems, as well as the changes currently occurring in them due to anthropogenic factors.
O3	Determining the role of marginal ecosystems in maintaining biodiversity and balance within the agricultural landscape.
O4	Familiarizing students with various methods of evaluating agricultural production space.

3.2. COURSE/MODULE LEARNING OUTCOMES

Learning Outcome	The description of the learning outcome defined for the course/module	Relation to the degree programme outcomes
LO_01	-the student knows and understands the fundamental principles governing the functioning of ecological systems in agroecosystems.	K_W01
LO_02	-permanent grassland – knows and understands the cause-and-effect relationships between ecological factors and plants and animals in agroecosystems	K_W02
LO_03	-knows and understands the significance of the living and non-living natural environment in the agricultural landscape, as well as the threats resulting from human activity	K_W05
LO_04	-is able to analyze the relationships between primary and secondary production in a meadow ecosystem using various methods and soil-agricultural maps	K_U01, K_U06
LO_05	-is able to list the factors limiting and stimulating primary production in field and meadow ecosystems	K_U03
LO_06	- is prepared to assess threats to agro-ecosystem biodiversity posed by human activity and proposes ways to counteract these threats	K_K01, K_K03

3.3. Course content

A. Lectures

Content outline
Familiarizing students with the lecture syllabus, requirements, and course assessment methods. The essence and scope of agroecology. Basic concepts used in agroecology.
Ecological factors of meadows and arable fields.
Selected forms of interaction between plants and animals in agricultural ecosystems (symbiosis, mycorrhiza, allelopathy, competition, parasitism, predation). Beneficial fauna.
The concept of agricultural landscape, landscape elements, and factors shaping its structure and stability.
Differences in ecological conditions between a cultivated field and a meadow. Economic and ecological significance of field and meadow ecosystems.
Ecology of meadow ecosystems. Primary and secondary productivity, limiting factors.
Cycling of water and nutrients in agricultural ecosystems.
The significance of marginal ecosystems in the agricultural landscape, threats, and conservation opportunities. Issues regarding the preservation of genetic resources of native populations of crop species and varieties, as well as animal breeds.

B. Laboratories

Content outline
Familiarizing students with the curriculum content of the practical classes, requirements, and the course assessment criteria. Types of plant communities found in agroecosystems.
A review of vegetation survey methods used in agroecosystems.
Analytical and synthetic characteristics of plant communities. Calculation of phytosociological constancy and cover coefficients.
Application of the Ellenberg phytoindication method in the valuation of arable habitats
Application of the Ellenberg phytoindication method in the valuation of meadow habitats
Comparison of ecological series of segetal, meadow, forest, and aquatic weed species in relation to various habitat factors. Plant communities as ecological indicators.
Agroecological assessment of soils.
Written test. Ecological assessment of soils based on soil-agricultural complexes.
Soil-agricultural maps and their practical application.
Comprehensive assessment of arable habitats using the IUNG method.
Habitat and landscape types in agricultural production areas – identification. Grassland suitability complexes.
The importance of phenology in agriculture. Phenological seasons.
Calculation and comparison of nutrient uptake by selected plant communities in field and meadow ecosystems.
Balance of organic matter and certain nutrients in an agricultural ecosystem; preparation of balances.
Written test. Calculation of energy utilization coefficients by producers in meadow and field ecosystems.

3.4. Methods of Instruction

Lecture: lecture with a multimedia presentation.
Laboratories: group work, problem-solving, project.

4. Assessment techniques and criteria
4.1 Methods of evaluating learning outcomes

Learning outcome	Methods of assessment of learning outcomes (e.g. test, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes...)
LO-01	WRITTEN ASSESSMENT	LECTURE
LO-02	WRITTEN ASSESSMENT	LECTURE
LO-03	WRITTEN ASSESSMENT	LECTURE
LO-04	TEST	LABORATORIES
LO-05	TEST	LABORATORIES
LO-06	OBSERVATION DURING CLASSES	LABORATORIES

4.2 Course assessment criteria

Laboratory classes: graded assessment
Test
determining the final grade based on component grades.
Lecture: an extended piece of writing.

To pass the course, students must achieve all the intended learning outcomes. The final grade is determined by the number of points obtained: satisfactory (dst) > 50% of the maximum possible points; satisfactory plus (dst plus) > 60%; good (db) > 70%; good plus (db plus) > 80%; very good (bdb) > 90%.

5. Total student workload needed to achieve the intended learning outcomes – number of hours and ECTS credits

Activity	Number of hours
Course hours	45
Other contact hours involving the teacher (consultation hours, examinations)	6
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	39
Total number of hours	90
Total number of ECTS credits	3

* One ECTS point corresponds to 25-30 hours of total student workload

6. Internships related to the course/module

Number of hours	

Internship regulations and procedures	

7. Instructional materials

Compulsory literature: materials provided by the teacher and online resources on the topics covered
Complementary literature: online resources on the topics covered

Approved by the Head of the Department or an authorised person