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 2029/2030

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	**Technological progress in agriculture**
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, Environmental Protection, and Management, Department of Crop Production
Field of study	Agriculture
Qualification level	first-cycle studies
Profile	general academic
Study mode	stationary
Year and semester of studies	Year 4, Semester 7
Course type	Specialization course / Agronomy with Agribusiness
Language of instruction	English
Coordinator	dr hab. inż. prof. UR Wacław Jarecki
Course instructor	dr hab. inż. prof. UR Wacław Jarecki

* - as agreed at the faculty

1.1. Learning format – number of hours and ECTS credits

Semester (no.)	Lectures	Classes	Laboratories	Seminars	Project classes	Internships	others	**ECTS credits**
7	15		20		10			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)
pass with a grade

2. PREREQUISITES

Knowledge of the fundamentals of general crop and soil management, specific crop production, animal production, agricultural engineering, farm organization and economics, and plant breeding and seed production.

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

3.1. Course/Module objectives

O1	To familiarize students with technological progress in agriculture.
O1	To present the quantitative and qualitative aspects of technological progress in crop production, livestock production, and the storage of agricultural products.
O3	To prepare students for independent work on developing projects for low-input and high-input farms that incorporate technological progress in agriculture, including nutrient and organic matter balances, the assessment of quantitative indicators of technological and varietal progress, and biomass balances for energy purposes.

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	knows and understands technological progress and its components, as well as the principles for selecting new agricultural technologies	K_W07
LO_02	knows and understands the quantitative and qualitative elements of agricultural production technology	K_W08
LO_03	is able to design plans for low-input and high-input farms that incorporate technological progress in agriculture	K_U01, K_U03
LO_04	is able to analyze nutrient and organic matter balances, as well as quantitative indicators of technological and varietal progress	K_U05
LO_05	is prepared to pursue further learning regarding the implementation of technological progress in agriculture and modern technologies in agricultural production	K_K01, K_K04

3.3. Course content

A. Lectures

Content outline
Agricultural progress and its drivers. Technological progress and its components.
Technological progress in crop and livestock production
Agricultural and economic assessment of technologies in crop and livestock production.
The impact of technological progress on the economic performance of agricultural production.
The concept of technology and principles of technology selection.
Technologies for energy crop production and their utilization.
Spatial variation in crop production technologies in Poland.

Food and non-food uses of raw materials and prospects for the development of agricultural production.

B. Classes, laboratorractical classes

Content outline
Technological advancements in crop protection and fertilization.
The role of crop varieties in the implementation of technological progress.
Precision fertilizer application, foliar fertilization, and crop irrigation.
Microbial products.
Alternative crops.
Decision support systems.
Presentation of tasks and group discussions. Design of low-input and high-input farming systems – a case study.

3.4. Methods of Instruction

Lecture: lecture with multimedia presentation
Laboratory classes: group work, problem-solving
Project classes: group work, problem-solving, discussion.

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	COLLOQUIUM	lectures, classes
LO-02	COLLOQUIUM	lectures, classes
LO-03	COLLOQUIUM, CONTINUOUS OBSERVATION DURING CLASSES, PROJECT	classes
LO-04	COLLOQUIUM, CONTINUOUS OBSERVATION DURING CLASSES	classes
LO-05	CONTINUOUS OBSERVATION DURING CLASSES	classes

4.2 Course assessment criteria

Lecture: credit based on a test (open-ended questions). Laboratory classes: grade determined based on a test. Project classes: grade based on the project. A passing grade is determined by the number of points obtained (>50% of the maximum) on the test consisting of open-ended questions: satisfactory (dst) 51–59%, satisfactory plus (dst plus) 60–69%, good (db) 70–79%, good plus (db plus) 80–89%, very good (bdb) 90–100%. To receive credit for the course, all intended learning outcomes must be achieved.

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)	4
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	26
Total number of hours	75
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