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** *2027/2028*
ACADEMIC YEAR *2026/2027*

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	**Agrophysics**
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
Field of study	Agriculture
Qualification level	second-cycle studies
Profile	general academic
Study mode	full-time
Year and semester of studies	I year, 1 semester
Course type	basic
Language of instruction	English
Coordinator	dr hab. inż. Piotr Kuźniar, prof. UR
Course instructor	dr hab. inż. Piotr Kuźniar, prof. UR

* - 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**
1	15		20					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)
exam

2. PREREQUISITES

Physics and mathematics at first-cycle level.

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

3.1. Course/Module objectives

O1	Familiarize students with complex physics concepts applicable to agriculture.
O2	Develop skills in measuring, describing, and calculating physical processes occurring in the soil-plant-atmosphere system.

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 graduate knows and understands the characteristics of physical processes occurring in soil, plants, and the atmosphere.	K_W01, K_W04
LO_02	Can perform measurements and calculations of complex physical quantities using computer techniques.	K_U04, K_U06
LO_03	Can analyse the influence of selected factors on complex physical processes occurring in soil, plants, and the atmosphere.	K_U01
LO_04	Is ready to critically evaluate their knowledge and recognize the importance of expert opinions when encountering difficulties in independently solving unusual problems.	K_K01, K_K02

3.3. Course content

A. Lectures

Content outline
Physical laws, quantities, and scales. Movement – its importance in nature. Thermodynamic characteristics of selected phenomena in soil and plants. Elastic properties of plant tissues. The atmosphere-plant-soil system. Energy balance in plants and soil.

B. Laboratories

Content outline
Measurement and calculation of selected agrophysical properties. Determination of air water potential. Measurement of soil water conductivity coefficient. Measurement of soil thermal conductivity coefficient. Assessment of selected mechanical properties of root crops, fruits, vegetables, and seeds.

3.4. Methods of Instruction

Lecture: lecture supported by a multimedia presentation
Laboratories: conducting experiments.

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 test, report and discussion	Lectures, Laboratories
LO_02	Observation of the experiment, report and discussion	Laboratories
LO_03	Report and discussion, written test	Laboratories, lectures
LO_04	Observation of the experiment, report and discussion	Laboratories

4.2 Course assessment criteria

Laboratories: a graded assessment based on partial grades from tests and laboratory reports. Lectures: a written exam, a longer written presentation. Passing the course is contingent upon achieving all the required learning outcomes. The number of points obtained determines the passing grade for the tests and exam. Final grade according to the scale: up to 50% – fail, >50% – satisfactory, >60% – satisfactory plus, >70% – good, >80% – good plus, >90% – very good.

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

Activity	Number of hours
Course hours	35
Other contact hours involving the teacher (consultation hours, examinations)	consultation - 5 examinations - 3
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	preparation for classes - 15 preparation reports - 16 preparation for exam - 16
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