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 2026/2027

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	**Water management and agrometeorology**
Course/Module code *	
Faculty (name of the unit offering the field of study)	Faculty of Technology and Natural Sciences
Name of the unit running the course	Institute of Agricultural Sciences, Environmental Protection and Management, Department of Soil Science, Environmental Chemistry and Hydrology Department of Crop Production
Field of study	Agriculture
Qualification level	first-cycle studies
Profile	general academic
Study mode	full-time studies
Year and semester of studies	year I, semester 1
Course type	major
Language of instruction	English
Coordinator	prof. dr hab. Jadwiga Stanek-Tarkowska, dr hab. inż. Jan Buczek, prof. UR
Course instructor	prof. dr hab. Jadwiga Stanek-Tarkowska, dr hab. inż. Jan Buczek, prof. UR (lec.) prof. dr hab. Jadwiga Stanek-Tarkowska, dr hab. inż. Jan Buczek, prof. UR (lab.)

* - 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		30					4

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 – exam
laboratories – pass with a grade

2. PREREQUISITES

Knowledge of the basic principles of physics, chemistry, and environmental protection at the upper-secondary school level

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

3.1. Course/Module objectives

O1	To familiarize students with water management, climatic factors, and climate elements.
O2	To impart knowledge regarding the formation of water resources and weather factors relevant to farmers and those involved in managing field-based agricultural production.
O3	To introduce students to basic meteorological elements (air temperature, air humidity, precipitation, cloud cover, radiation and sunshine duration, atmospheric pressure, wind) and environmental water resources.
O4	To highlight the interrelationships between water resources and meteorological elements, as well as their impact on the climate and the surrounding natural environment.

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 hydrological and climatic factors as well as elements of the climate	K_W01
LO_02	knows and understands the role of water resources in the environment, weather phenomena, and meteorological factors relevant to farmers and those managing field-based agricultural production	K_W04, K_W05
LO_03	is able to characterize the basic elements of the water balance and meteorological factors, air temperature, air humidity, precipitation, cloud cover, radiation and sunshine duration, atmospheric pressure, and wind	K_U03, K_U04
LO_04	is prepared to work in a team to identify hydrological and weather-related risks to agricultural production	K_K01

3.3. Course content

A. Lectures

Content outline
Formation and role of water resources in the environment
The global hydrological cycle and its components
Water balance in Poland and worldwide
Methods for determining soil water retention; factors shaping field water capacity, unit water capacity, and the crop water utilization index

Earth's atmosphere: composition of atmospheric air, vertical structure of the atmosphere, atmospheric pressure
Geographic climate-forming factors; climates of different Earth zones; contemporary climate change
Organization of measurements and observations of meteorological elements; principles for measuring and assessing key weather elements; agro-climatic zones of Poland; climate of Poland and the region
Use of meteorological data to forecast weather patterns and atmospheric phenomena; adverse weather factors affecting agricultural production

B. Laboratories

Content outline
Characteristics of precipitation
Determining the impact of air temperature on evapotranspiration rates
Assessing soil moisture levels for a selected year
Characterization of soil percolation for a selected year; calculation of deep drainage based on equations
Determining water content in various soil types based on land use and mineral fertilization levels
Characterization of water retention in selected soil complexes; soil water, research methods and the effects of water deficit or excess
Determining components of the soil-plant water balance
Calculating unit water consumption and indices of water use and utilization by crops
Organization of meteorological services, discussion and group work
Observations and measurements at a meteorological station, presentation of the station and its operations
Solar radiation and its characteristics Measurement of precipitation and atmospheric deposits
Cloud identification and classification, group work
Soil and air temperature, measurements and description; vertical and geographical temperature distribution
Atmospheric air movement, measurements and description
Humidity and evaporation; Poland's climate, with a particular focus on the Podkarpackie Voivodeship

3.4. Methods of Instruction

Lecture: lecture with multimedia presentation

Laboratories: 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	exam	lec.
LO_02	exam	lec.
LO_03	test	lec., lab.
LO_04	continuous observation during classes	lab.

4.2 Course assessment criteria

Lecture: exam Laboratories: determining the final grade based on partial grades from mid-term tests To pass the course, all intended learning outcomes must be achieved. A passing grade is determined by the number of points obtained (>50% of the maximum score): satisfactory (dst) 51–60%, satisfactory plus (dst plus) 61–70%, good (db) 71–80%, good plus (db plus) 81–90%, very good (bdb) 91–100%.

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.)	51
Total number of hours	100
Total number of ECTS credits	4

* 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