

Subject card

Subject name and code	Biochemical ecology, PG_00103537						
Field of study	Environmental Protection						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2026/2027		
Education level	Bachelor's studies	Subject group			Optional subject group		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			2.0		
Learning profile	academic	Assessment form			credit		
Conducting unit	Laboratory of Natural Products Analysis -> Department of Environmental Analysis -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Marek Gołębiowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Additional information: multimedia-based lecture						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		5.0		15.0	50
Subject objectives	The aim of the lecture will be to familiarize students with biochemical ecology as a science that studies chemical interactions between living organisms and their interactions with the environment. Familiarization with chemical compounds and their role in the interactions of plants and animals with the environment. To familiarize students with practical aspects of interactions between organisms, such as plant resistance and pest control.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[OŚL3_U01] Performs tasks under supervision and independently in the field of analysis of the natural environment and the functioning of natural and man-made natural systems.	1. can present and describe the chemical mechanisms of adaptation of plants to stressful conditions 2. can present and describe the chemical basis of interactions between organisms 3. can present and describe the chemical defense of organisms 4. can present and describe selected bioinsecticides used to fight harmful insects 5. can present and describe the biochemical basis of plant resistance to diseases	[SU4] test/exam - oral or written
	[OŚL3_W02] Characterises the relationships and relationships between various disciplines of natural sciences and science, uses knowledge of mathematics, physics, chemistry and biology in the description of basic concepts, concepts and principles in environmental protection.	1. defines concepts related to biochemical ecology	[SW4] test/exam - oral or written
	[OŚL3_K05] Identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development.	1. understands the need for further education to obtain specialized qualifications	[SK4] test/exam - oral or written
	[OŚL3_W05] Explains the course of natural and anthropopressional physical, chemical and biological processes and phenomena occurring in nature at various levels of matter organisation.	1. knows the processes and phenomena occurring in nature	[SW4] test/exam - oral or written
	[OŚL3_U04] Uses specialist language in the discussion and properly uses the nomenclature in the field of environmental protection and individual disciplines related to it.	1. talks about ecological issues using professional terminology	[SU4] test/exam - oral or written
	[OŚL3_W08] Explains the mechanisms of economic and consumer pressure on the environment and recognises the possibilities of reducing it using the latest knowledge and scientific achievements.	1. understands the literature regarding biochemical ecology	[SW4] test/exam - oral or written
Subject contents	Biochemical adaptation of plants to climatic and soil conditions. Mechanisms of detoxification of fungicides, herbicides and phenolic compounds. Biochemistry of plant pollination: the role of nectar, pollen, color and scent of flowers. Plant toxins and their effect on animals. Hormonal interactions between plants and animals. Molting and juvenile hormones of insects found in plants. Insect feeding preferences: selection of plants by insects, compounds of secondary metabolism as attractants and repellents. Food preferences of vertebrates: choice of food of plant origin, substances determining taste and taste modifiers. Pheromones and animal defense substances. The use of bioinsecticides. Plant-insect allelochemical interactions. Biochemical interactions between higher plants and higher plant-lower plant interactions. Biochemical basis of plant resistance to diseases. Phytotoxins in plant diseases.		
Prerequisites and co-requisites	Knowledge of the basics of chemistry, biochemistry, ecology and biology		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written exam with test and open questions	51.0%	100.0%
Recommended reading	Basic literature	1. Harborne L. B. Ekologia biochemiczna. Wydawnictwo Naukowe PWN, Warszawa, 1997. 2. Kączkowski J. Biochemia roślin. Wydawnictwo Naukowe PWN, Warszawa, 1993. 3. Kohlmunzer S. Farmakognozja. Wydawnictwo Lekarskie PZWL, Warszawa, 1993.	
	Supplementary literature	1. Ostroumow S.A.: Introduction to biochemical ecology, PWN, Warszawa, 1992 2. Oleszek W., Głowiak K., Leszczyński B.: Biochemical environmental interactions, Wydawnictwo Akademii Medycznej w Lublinie, Lublin, 2001 3. Kociotek-Balawejder E., Stanisławska E.: Environmental chemistry, Wydawnictwo Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, Wrocław 2012	

	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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