

Subject name	Agroecology and Environmental Protection	
Subject code	R.1s.EPR.NLRROAY	
Department	Agrotechnology and Agricultural Ecology	
Faculty	Agriculture and Economics	
Subject supervisor/Lecturer	Profesor Barbara Filipek-Mazur, Dr. Agnieszka Synowiec, Dr Monika Tabak	
General information	semester	winter or summer
	ECTS credits	6
	Lectures total	15 hrs
	Laboratories/classes	30 hrs
Objective and general description	<p>The course presents the aims and scope of contemporary agroecological research, abiotic and abiotic factors conditioning distribution of organisms in agroecosystems, the use of plants for bioindication and valorisation of the natural environment condition, differences between natural biocenoses and agrocenoses, as well as symptoms and ecological effects of human interference with agroecosystems. Presented will be the kinds and sources of air, water and soil pollution and their results, but also the methods of counteracting environmental threats. Discussed will be legal regulations concerning the natural environment, currently in force. Students will become acquainted with selected methods of environmental samples analysis.</p> <p>1-2. Introduction to some issues of environmental protection; legal regulations concerning environmental protection</p> <p>3-4. Physical, chemical and microbiological pollutants of the atmospheric air.</p> <p>5. Noise and vibrations</p> <p>6-7. Water pollution and sewage in the environment</p> <p>8. Waste disposal</p> <p>9-10. Devastation and degradation of soils, chemical pollutants in soils, kinds and sources of pollution.</p> <p>11. Basic notions and some issues of agroecological research</p> <p>12. Abiotic site factors,, their effect on components of agrocenoses and possible regulation</p> <p>13. Biotic factors, their effect on agrocenose components and arable field habitat; autotrophs and heterotrophs – their importance for agroecosystem</p> <p>14. Biocenosis – structures ensuring the system functioning</p> <p>15. The most important difference between natural biocenoses and agrocenoses and ecological and environmental consequences of human interference in agroecosystem.</p> <p>Laboratories/projects: 30 hrs.</p> <p>1-5. Ecological tolerance of the organisms and its use for phytoindication (Ellenberg's autoecological method for valorization of field habitats – individual projects)</p> <p>6-8. Synecological methods of agricultural habitats assessment (individual projects): comparison of methods</p> <p>9-12. Methods of assessing the population number and density in agricultural research and their practical use in agriculture (hazard</p>	

	<p>thresholds)</p> <p>13-15. Estimating of net field production – calculations of the production amount of primary production of an arable field.</p> <p>16-17. Estimating of air quality index based on data from air quality monitoring</p> <p>18-20. Determination of nitrate (V) in water and wastewater</p> <p>21-23. COD determination in water and wastewater using chromate method</p> <p>24-27. Determination of heavy metals in spoil and plants, estimating of translocation and bioaccumulation rates of selected metals. Calculation of the effectiveness of bioremediation.</p> <p>28-30. Estimating methane emission from municipal landfills for selected morphometric parameters.</p>
Assessment method	Test (1st and 2nd term) and descriptive examination (3rd term).
References	<p>VanLoon G.W., Duffy S. J. 2001. Environmental chemistry. A global perspective. Oxford University Press, Oxford.</p> <p>Current environmental protection statistical data for Poland and European Union (source: Central Statistical Office and Eurostat).</p> <p>Environmental protection legislation currently in force in Poland and European Union.</p> <p>Gliessman S.R. 2007. Agroecology. the Ecology of Sustainable Food systems. CRS Press</p>