

**Course name:****AGROECOLOGY AND ENVIRONMENTAL PROTECTION**

ECTS	5
Course status	obligatory
Course final assesement/evaluation of outcomes	exam
Prerequisites	n.a.

**Main field of study:****AGRICULTURE, AGRONOMY, ENVIRONMENTAL PROTECTION**

Profile of study	General-academic
The code of studies (education level)	SI/SM (bachelor/master)
Semester of studies	winter
Language of instruction	English

**Course offered by:**

Name of faculty offering the course	Faculty of Agriculture and Economics
Name of department offering the course	Department of Agroecology and Crop Production, Department of Agricultural and Environmental Chemistry
Course coordinator	Agnieszka Synowiec, Monika Tabak

**Learning outcomes of the course:**

Symbol of outcome	Description of learning outcome	Reference to	
		main field of study outcomes	discipline#

**KNOWLEDGE – student knows and/or understands:**

AEP_W1	characterizes the basic issues concerning the structure and functioning of the basic life processes of plants, regulation mechanisms and the plant-environment interaction	RO1_W10	RR
AEP_W2	identifies phenomena and processes in the atmosphere, hydrosphere and lithosphere	RO1_W08	RR

**SKILLS – student is able to:**

AEP_U1	understands the relationship between structure and function at the level of cells, tissues, individual organisms and populations	RO1_U08	RR
AEP_U2	presents results his own tasks using various forms and participates in discussions in order to reach a common position	RO1_U04	RR
AEP_U3	recognizes the cause and effect relationships of phenomena occurring in nature	RO1_U18	RR

**SOCIAL COMPETENCE- student is ready to:**

AEP_K1	is aware of the environmental burdens resulting from crop production	RO1_K06	RR
AEP_K2	solves tasks on his own or in a team, fulfilling designated functions	RO1_K02	RR
AEP_K3	Realize the necessity of constant upgrading his knowledge due to technological progress and changes in legislation.	RO1_K07	RR

**Teaching contents:**

<b>Lectures</b>	<b>15</b>	<b>hours</b>
Basic notions and some issues of agroecological research		

Topics of the lectures	<p>Abiotic site factors, their effect on components of agroecosystems and possible regulation</p> <p>Biotic factors, their effect on agroecosystem components and arable field habitat; autotrophs and heterotrophs – their importance for agroecosystem</p> <p>Biocenosis – structures ensuring the system functioning</p> <p>The most important difference between natural biocenoses and agroecosystems and ecological and environmental consequences of human interference in agroecosystem</p> <p>Introduction to environmental protection – historical aspects, basic definitions, main legal acts of EU and Polish law.</p> <p>Water pollution.</p> <p>Air pollution.</p> <p>Soil degradation.</p> <p>Noise, light and visual pollution.</p> <p>Waste management.</p>
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Accomplished learning outcomes	<i>AEP_W1, AEP_W2, AEP_U1, AEP_U2, AEP_K1, AEP_K3</i>
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Verification methods, rules and criteria of outcome assessment	<b>essay and test exam (60 %)</b>
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<b>Classes</b>	<b>30</b>	<b>hours</b>
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Topics of the classes	<p>Ecological tolerance of the organisms and its use for phytointication (Ellenberg's autoecological method for valorization of field habitats – individual projects)</p> <p>Synecological methods of agricultural habitats assessment (individual projects): comparison of methods</p> <p>Methods of assessing the population number and density in agricultural research and their practical use in agriculture (hazard thresholds)</p> <p>Estimating of net field production – calculations of the production amount of primary production of an arable field.</p> <p>Estimation of air quality index based on data from air quality monitoring.</p> <p>Determination of sulfur dioxide in air.</p> <p>Determination of salinity of environmental samples.</p> <p>COD (chemical oxygen demand) determination in water and wastewater.</p> <p>Determination of nitrate (V) in environmental samples.</p> <p>Determination of heavy metals in soil and plants, estimating of translocation and bioaccumulation rates of selected metals.</p> <p>Estimation of organic waste stability.</p>
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Accomplished learning outcomes	<i>AEP_W1, AEP_W2, AEP_U1, AEP_U2, AEP_U3, AEP_K1, AEP_K2, AEP_K3</i>
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Verification methods, rules and criteria of outcome assessment	<b>individual projects (40%)</b>
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<b>Seminars</b>	<b>...</b>	<b>hours</b>
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Topics of the seminars	
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Accomplished learning outcomes	<i>symbol of learning outcomes for the classes</i>
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Verification methods, rules and criteria of outcome assessment	<i>together with participation in the final assessment (in %)</i>
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**References:**

Basic	<ol style="list-style-type: none"> <li>1. Gliessman S.R. 2007. <i>Agroecology. the Ecology of Sustainable Food systems</i>. CRS Press.</li> <li>2. VanLoon G.W., Duffy S. J. 2010. <i>Environmental chemistry. A global perspective</i>. Oxford University Press, Oxford.</li> </ol>
Supplementary	<ol style="list-style-type: none"> <li>1. <i>Scientific papers provided by the teacher during the course</i></li> <li>2. <i>Environmental protection statistical data for European Union (source: Eurostat)</i>.</li> </ol>

**Structure of learning outcomes:**

Discipline: # RR	5	ECTS**
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Discipline:				ECTS**
<b>Structure of student activities:</b>				
Contact hours	51	hours	2	ECTS**
including:	lectures	15	hours	
	classes and seminars	30	hours	
	consultations	4	hours	
	participation in research	...	hours	
	mandatory traineeships	...	hours	
	participation in examinations	2	hours	
e-learning	...	hours	...	ECTS**
student own work	75	hours	3	ECTS**

Syllabus valid from the academic year 2021/2022

\* **where 10 hours of classes = 1 ECTC (in case of 15 h → 2 ECTS)**

\*\* stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

# academic discipline code: RR - agriculture and horticulture