

Course name:**ECOTOXICOLOGY (capital letters)**

ECTS	5
Course status	obligatory
Course final assesement/evaluation of outcomes	exam
Prerequisites	non

Main field of study:**field of study name (capital letters)**

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

Course offered by:

Name of faculty offering the course	Faculty of Agricultural and Economics
Name of department offering the course	Department of Agricultural and Environmental Chemistry
Course coordinator	Agnieszka Baran

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:

ECO_W1	Identify toxic substances in the environment and their fate in the environment	OŚ1_WO1, OŚ1_WO2	RR
ECO_W2	Integrate knowledge from different disciplines in order to understand the toxicity of chemicals	OŚ1_WO5, OŚ1_WO6 OŚ1_WO7, OŚ1_WO8 OŚ1_WO1, OŚ1_WO11	RR

SKILLS – student is able to:

ECO_U1	Identify toxic substances in the environment and their fate in the environment	OŚ1_UO3, OŚ1_UO11	RR
ECO_U2	Integrate knowledge from different disciplines in order to understand the toxicity of chemicals	OŚ1_UO4, OŚ1_UO5, OŚ1_UO6	RR
ECO_U3	Estimate the health risks associated with exposure to xenobiotics in the environment	OŚ1_UO6, OŚ1_UO11	RR

SOCIAL COMPETENCE- student is ready to:

ECO_K1	Organize the work in a small team in order to perform exercises	OŚ1_KO3 OŚ2_KO4	RR
--------	---	--------------------	----

Teaching contents:

Lectures		15	hours
Topics of the lectures	1. Ecotoxicology as an interdisciplinary science. The basic terms of ecotoxicology: xenobiotic, harmful chemical, pollutant, poison, toxicology, bioassays, biomarkers and biosensors. 2. Fate of toxic substances in the ecosystem (toxic substances and their division, toxic substances routes, bioaccumulation and biomagnifications coefficients). 3. The effect of physicochemical factors in the environment on the interactions between toxic substances (synergism, addictiveness, compensation). 4. Fate of toxic substances in living organism. Methods of detoxication. 5. Health and Ecological Risk Assessment		

Accomplished learning outcomes	<i>ECO_W1, ECO-W2</i>
--------------------------------	-----------------------

Verification methods, rules and criteria of outcome assessment	<i>written exam (50% share in the final assessment)</i>
--	---

Classes		35	hours
----------------	--	-----------	--------------

Topics of the classes	1. Dose-response relationships. Quantitative indices of toxic effects assessment. Computing of LD50 on the basis of experimental data 2. Assessment of toxicity of soil and bottom sediment contaminated with heavy metals for plants – Phytotoxkit test 3. Assessment of concentration of heavy metal in soil and plants – calculation of Bioaccumulation Coefficient 4. Assessment of toxicity of freshwater using the crustacean <i>Daphnia magna</i> 5. Toxicity of natural substance – Assessment of oxalates concentration in selected stimulants (coffee, tea) . 6. Toxicity of salt – Assessment of chloride concentration in food (bread). 7. Toxicity of mercury – Assessment of mercury concentration in fish. 8. Toxicity of nitrate(V) – Assessment of nitrate(V) concentration in vegetable		
-----------------------	--	--	--

Accomplished learning outcomes	<i>ECO_U1, ECO_U2, ECO_U3, ECO_K1</i>
--------------------------------	---------------------------------------

Verification methods, rules and criteria of outcome assessment	<i>passing the laboratory work report (50% share in the final grade)</i>
--	--

Seminars		...	hours
-----------------	--	------------	--------------

Topics of the seminars			
------------------------	--	--	--

Accomplished learning outcomes	<i>symbol of learning outcomes of the seminars</i>
--------------------------------	--

Verification methods, rules and criteria of outcome assessment	<i>together with participation in the final assesement (in %)</i>
--	---

References:

Basic	1. Baran A., Kolton A. 2015. <i>Ecotoxicology. w: Agroecology</i> , Ropek D. (red.), 2014, Publishing House of the University of Agriculture, ISBN 978-83-64758-06-5, 117-130. 2. Walker C.H, Hopkin P., Silby R.M., Peakall D.B. <i>Principles of Ecotoxicology</i> . Taylor&Francis, 2000.
Supplementary	1. Newman M.C. 2015. <i>Fundamental of ecotoxicology. The science of pollution</i> . CRC Press Taylor & Francis Group

Structure of learning outcomes:

Discipline: # RR	5	ECTS**
Discipline:		ECTS**

Structure of student activities:

Contact hours	58	hours	2,3	ECTS**
including:				
lectures	15	hours		
classes and seminars	35	hours		
consultations	6	hours		
participation in research		hours		
mandatory traineeships	...	hours		
participation in examinations	2	hours		
e-learning	...	hours	...	ECTS**
student own work	68	hours	2,7	ECTS**

Syllabus valid from the academic year 2021/2022

* **where 10 hours of classes = 1 ECTS (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