Description of the education module/course (syllabus)

Course name:	**Ecotoxicology**	**ECTS**	**3**
Translation of the course name into English:	-		
Study field:	General Horticulture		

Language of lectures: English		Study level: Master of cience	
Study form: ☒ stationary ☐ extramural	Status of lectures: ☐ primary ☒ obligatory ☒ directional ☐ facultative	Semester number: 2	☒ winter semester ☐ spring semester
Academic year from which the description applies	**2021/2022**	Catalog number:	**OGR-O2-S-2Z10 ang**

Course coordinator:	Dr Grażyna Obidoska
Lecturers:	Dr Grażyna Obidoska
Unit running the course:	Department of Environmental Protection
Unit ordering the course:	Faculty of Horticulture
Assumptions, objectives and description of the course:	Aim: To present: toxic and genotoxic substances in the environment, their effects on plants and plant consumer health; selected bioindication methods used for ecotoxicological evaluation of chemical substances and environmental samples. Lectures: Fate of ecotoxins in the environment. Characteristics of selected ecotoxins (PCBs, dioxins, organochlorine pesticides, PAHs -Policyclic Aromatic Hydrocarbons, metals, nitrogen and sulfur dioxides, tropospheric ozone); sources, cumulation in plant and animal tissues, biomagnification, effects in plants and consumer risk. Laboratory exercises: Standard toxicity and genotoxicity assays (especially with plant bioindicators) and their practical application: toxicity and genotoxicity assessment with Phytotoxkit and Root Tip Assay (RTA)
Didactic forms, number of hours:	a) Lectures 15 hours b) Laboratory exercises 15 hours
Teaching methods:	Lecture – multimedia presentation Laboratory exercises: Techniques practicing, experiment, analysis and interpretation of results, presentation
Formal requirements and prerequisites:	Basics of chemistry and plan physiology
Learning outcomes:	Knowledge: W1 Knows basic environmental toxins and genotoxins, their sources and effects in plants. W2 Knows and understands a potential negative role of plants as organisms introducing number of environmental toxins into the food chain and the associated human health risks Skills: U1 Is able to plan and perform basic phytotoxicity evaluation of environmental samples and chemical substances, interpret and present the obtained results U2 Is able to use library and internet data bases, elaborate and present ecotoxicological issues Competences: K1 Is ready for new solutions serving the quality improvement of environment and plant production K2 Is aware of social, professional and ethical responsibility for the quality of produced food and the state of environment
The way of verification of learning outcomes :	W1,W2 Score from a written exam from lecture material U1,U2,K1,K2 Scores achieved from tasks undertaken during exercises in class and as a homework
Form of documentation of achieved learning outcomes :	Written exam from lecture material (questions and answers with the achieved score) Collected student exercise works performed during exercises in class and as a homework Scores from the exercise part and from the written exam in a student score card
Elements and weights affecting the final grade:	Score from the written exam 50% Average score from tasks undertaken during exercises in class and as a homework 50%
Place of classes:	Laboratory, lecture room
Basic and supplementary literature : 1. Walker C.H., Hopkin S.P., Sibly R.M., Peakall D.B.: Podstawy ekotoksykologii [Principles of Ecotoxicology], PWN Warszawa,2002 2. Sadowska A., Obidoska G., Rumowska M.: Ekotoksykologia. Toksyczne czynniki środowiskowe i metody ich wykrywania [Ecotoxicology. Toxic environmental factors and methods of their indication]. Wyd. SGGW, Warszawa 2000. 3. Bell J.N.B., Treshow M.: Zanieczyszczenie powietrza a życie roślin [Air pollution and plant life]. WNT Warszawa, 2004	
COMMENTS	

Quantitative indicators characterizing the module / object:

Estimated total number of student work hours (contact and own work) necessary to achieve the assumed learning	**70 h**

outcomes - on this basis, complete the ECTS field:	
The total number of ECTS points that a student receives in classes requiring direct participation of academic teachers or other lecturers:	**1,5 ECTS**

Table of compliance of the directional learning outcomes with the effects of the course:

Effect category	Learning outcomes for the course:	Reference to learning outcomes specific for study program on particular study field (direction)	The impact of course on the directional effect *)
Knowledge – W1	Knows basic environmental toxins and genotoxins, their sources and effects in plants.	K_W01; K_W02	2;2
Knowledge –W2	Knows and understands a potential negative role of plants as organisms introducing number of environmental toxins into the food chain and the associated human health risks	K_W06	2
Skills – U1	Is able to plan and perform basic phytotoxicity evaluation of environmental samples and chemical substances, interpret and present the obtained results	K_U01	2
Skills –U2	Is able to use library and internet data bases, elaborate and present ecotoxicological issues	K_U07; K_U08; K_U10	3; 3; 2
Competences –K1	Is ready for new solutions serving the quality improvement of environment and plant production	K_K01	2
Competences –K2	Is aware of social, professional and ethical responsibility for the quality of produced food and the state of environment	K_K04	3

*)

3 – znaczący i szczegółowy,

2 – częściowy,

1 – podstawowy,