Description of the education module/course (syllabus)

Course name:	**Natural and legal basis of landscape and ecological infrastructure protection**	**ECTS**	**3**
Translation of the course name into English:	-		
Study field:	General Horticulture		

Language of lectures:			Study level: Master of science	
Study form: ☒ stationary ☐ extramural	Status of lectures: ☐ primary ☒ directional	☒ obligatory ☐ facultative	Semester number: 2	☒ winter semester ☐ spring semester
Academic year from which the description applies	**2021/2022**	Catalog number:	**OGR-O2-S-2Z08 ang**	

Course coordinator:	Dr Marta Stankiewicz-Kosyl		
Lecturers:	Prof. Barbara Żarska, dr. Marta Stankiewicz-Kosyl, dr Arkadiusz Przybysz		
Unit running the course:	Laboratory of Basic Natural Sciences in Horticulture		
Unit ordering the course:	Faculty of Horticulture		
Assumptions, objectives and description of the course:	Aims and objectives: Intensive and conventional plant production have a dramatic impact on landscape quality and biodiversity. Protection of natural environment in the neighborhood of farms is one of EU priorities for which financial support is still augmenting. Polish farmers together with scientists working in environment design and protection have to cope with the necessity of introducing changes in the structure of farm and countryside landscape, e.g. establishing of mandatory uncultivated land. They have to be prepared to utilize those new conditions with the greatest possible benefits for themselves and surrounding environment. Conventional plant production might be also one of the reasons for mass appearance of pests and herbicide resistant weeds. Therefore many attempts are made, and will be taken in the future, to enhance the quantity and quality of semi-natural elements in the countryside. It is, among others, response to the demand for high-quality and healthy food without chemical residues, which will be produced in an attractive and biodiversity rich environment. The course aims at acquisition by students the current knowledge about optimization of ecological infrastructure of farms and surrounding environment in accordance with the guidelines of the PROW and the EU. Description of the classes: Lectures: Students will be introduced to important species of flora, and ecosystem and landscape diversity of countryside. The most valuable and beneficial natural plant habitats, such us low intensive grasslands, litter meadows and woodland patches will be characterized and methods of their establishment and maintenance will be provided. Students will be also acquainted with key representatives of beneficial vertebrates (amphibians, reptiles, birds and mammals) and naturally occurring enemies of crop pests. Emphasis will be focused on their useful role in farms neighborhood, habitat and food preferences - methods promoting their presence, protection and activity will be presented. Methods of maintenance and protection of endangered species of flora and fauna will be demonstrated, especially in the context of EU subsidies. Lectures will also aim at increasing of students sensitivity to the problems of biodiversity and mutual relationships occurring between the world of plants and animals in countryside. Practices: The network of ecological infrastructure is composed of three basic elements different in size and functions: large habitats, smaller habitats (“stepping stones”) and corridor structures. Practice classes will describe the most important types of ecological infrastructure (hedges, conservation headlands, wildflower strips and rotational fallows), the methods of their establishment and improvement. Students will learn how to evaluate their quality, about their role in agroecosystem and differences in their utilization in various types of farms. During practices students will learn in practice (individual projects) how to asses and improve ecological infrastructure of the farm together with enhancement of biological diversity. Leading idea of the projects is to maximize the potential of uncultivated land. Pollinators, especially wild species (solitary bees and bumblebees), their habitat and food (honey and pollen plants) preferences, biology of development will be characterized. This knowledge will help students to understand benefits of presence of these organisms in countryside.		
Didactic forms, number of hours:	Lectures: 15 hours Excersises: 15 hours		
Teaching methods:	Audio-visual methods, laboratory and greenhouse experiments, discussion, problem solving, consultations.		
Formal requirements and prerequisites:	Before starting the course the student should have general knowledge of botany, environment protection, ecology, soil science, entomology		
Learning outcomes:	Knowledge: W_01 – Knows and understands types of ecological infrastructure and most valuable natural plant habitats. W_02 – Knows and understands flora and fauna of countryside and mutual relationships occurring between the world of plants, animals and farmers.	Skills: U_01 – Can evaluate the current state of ecological infrastructure of farms together with their immediate surroundings. U_02 – Can optimize the ecological infrastructure of farms and their immediate surroundings.	Competences: K_01 – Have increased sensitivity to the problems associated with biodiversity.
The way of verification of learning outcomes :	W_01, W_02 – written exam W_01, W_02, U_01, U_02, K_01 - presentation of own projects concerning improvement of ecological infrastructure of selected farm or countryside area		

Form of documentation of achieved learning outcomes :	Archived exams and files with students presentations.
Elements and weights affecting the final grade:	Written exam – 50%, presentation of individual projects – 50%
Place of classes:	Lecture room, laboratory room, greenhouse.

Basic and supplementary literature :

1. Boller E.F., Häni F., Poehling H-M. 2004. Ecological Infrastructures. Ideabook on Functional Biodiversity at the Farm Level. Swiss Centre for Agricultural Extension and Rural Development (LBL), Eschikon, Switzerland.
2. Bałazy S., Gmiąt A. (red.) 2007. Ochrona środowiska rolniczego w świetle programów rolno-środowiskowych Unii Europejskiej. Małopolski Ośrodek Doradztwa Rolniczego, Zakład Badań Środowiska Rolniczego i Leśnego PAN w Poznaniu, Instytut Nauk o Środowisku Uniwersytetu Jagiellońskiego w Krakowie.
3. Stankiewicz M., Gadamski G., Gawroński S. W. 2001. Genetic variation and phylogenetic relationships of triazine-resistant and triazine-susceptible biotypes of Solanum nigrum - analysis using RAPD markers. Weed Research 41(4): 287-300.
4. Żarska B. 2005. Ochrona krajobrazu. Wyd. III zmienione. Wyd. SGGW, Warszawa.
5. Kruszewicz A. G. 2011. Ptaki Polski Tom 1 i 2. Wyd. Multico.
6. Tomalak M, Sosnowska D. (Red). 2008. Organizmy pożyteczne w środowisku rolniczym. IORPIB, Poznań.
7. Trojanowski R., Kużniak S., Kujawa K., Jerzak L. 2009. Ekologia ptaków krajobrazu rolniczego. Bogucki Wydawnictwo Naukowe, Poznań.
8. Materials provided by lecturer.

COMMENTS

The following scale is used to calculate the final grade: 100-91% points - 5,0; 90-81% points - 4,5; 80-71% points - 4,0; 70-61% points - 3,5; 60-51% points- 3,0.

Quantitative indicators characterizing the module / object:

Estimated total number of student work hours (contact and own work) necessary to achieve the assumed learning outcomes - on this basis, complete the ECTS field:	**73 h**
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 – W_01	Knows and understands types of ecological infrastructure and most valuable natural plant habitats.	K_W01; K_W02	2; 1
Knowledge – W_02	Knows and understands flora and fauna of countryside and mutual relationships occurring between the world of plants, animals and farmers.	K_W03	1
Skills – U_01	Can evaluate the current state of ecological infrastructure of farms together with their immediate surroundings.	K_U03; K_U06	2; 1
Skills –U_02	Can optimize the ecological infrastructure of farms and their immediate surroundings.	K_U01; K_U03; K_U04; K_U06; K_U08	1; 1; 1; 1; 1
Competences – K_01	Have increased sensitivity to the problems associated with biodiversity.	K_K04	1

*)

3 – znaczący i szczegółowy,

2 – częściowy,

1 – podstawowy,