Description of the education module/course (syllabus)

Course name:	**The microworld of fungi**	**ECTS**	**2**
Translation of the course name into English:	-		
Study field:	General Horticulture		

Language of lectures: English		Study level: Master of science	
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-2Z12 ang**

Course coordinator:	Dr Jacek Olchowik		
Lecturers:	Dr Jacek Olchowik		
Unit running the course:	Department of Plant Pathology		
Unit ordering the course:	Faculty of Horticulture		
Assumptions, objectives and description of the course:	Objectives of the course: acquainting students with the morphology and biology of hyperparasites that cause plant diseases; presentation of the symbiosis of mycorrhizal fungi and plants as a complex process important for the adjustment of both components; characterization of the biological basis of sexual processes in Ascomycota. Exercises: preparation of individual preparations of hyperparasites and their analysis under a microscope, various methods of work with hyperparasites to identify them and learn about their biology; types of mycorrhiza and its functions; the degree of mycorrhization; the genetics of mating type determination; methods applied for the identification of mating types.		
Didactic forms, number of hours:	Exercises: 15h		
Teaching methods:	multimedia presentations, foliograms, herbarium materials; analysis and documentation of individual structures of hyperparasites in microscopic preparations; isolation of mycorrhizal fungi from the roots of trees		
Formal requirements and prerequisites:	The student has the knowledge of botany and general plant pathology		
Learning outcomes:	Knowledge: W_01 - know and understand the material in the field of the hyperparasites W_02 - know and understand the material in the field of the most important mycorrhizal fungi and their importance in ecosystem	Skills: U_01 – can explain the importance of fungi in adapting plants to environmental conditions	Competences: K_01 - is ready to use various microorganisms in plant protection
The way of verification of learning outcomes:	Effects: W_01, W_02, U_01, K_01 – tests		
Form of documentation of achieved learning outcomes :	The personal card of a student		
Elements and weights affecting the final grade:	Tests: 100%		
Place of classes:	Classrooms		

Basic and supplementary literature :

1. Mańka M. 2011. Choroby drzew leśnych. PWRiL, Warszawa.
2. Mańka K. 2005. Fitopatologia leśna. PWRiL, Warszawa.
3. Brundrett M.; Bougher N.; Dell B.; Grove T.; Malajczuk N. 1996. Working with Mycorrhizas in Forestry and Agriculture. ACIAR Monograph 32. Australian Centre for International Agricultural Research, Canberra.
4. Marcinkowska J., 2012. Oznaczanie rodzajów grzybów sensu lato ważnych w fitopatologii. PWRiL Warszawa
5. Kochman J. 1986. Zarys mikologii dla fitopatologów. Wydawnictwo SGGW
6. Zamorski C. 1984. Materiały do zajęć specjalizacyjnych z fitopatologii. Część III. Zasady identyfikacji grzybów patogenicznych dla roślin. Wyd. SGGW.

COMMENTS

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:	**50 h**
The total number of ECTS points that a student receives in classes requiring direct participation of academic teachers or other lecturers:	**1 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	know and understand the material in the field of the hyperparasites	K_W03	1
Knowledge - W_02	know and understand the material in the field of the most important mycorrhizal fungi and their importance in ecosystem	K_W03; K_W04	1; 1
Skills - U_01	can explain the importance of fungi in adapting plants to environmental conditions	K_U02	1
Competences - K_01	is ready to use various microorganisms in plant protection	K_K01	1

*)

3 – znaczący i szczegółowy,

2 – częściowy,

1 – podstawowy,