Polish name of the course:	Ochrona roślin w rolnictwie ekologicznym	ECTS	3,0
English name of the course:	Plant protection management in organic agriculture		
Name of study	Agricultural		

Language: English		Study level: I	
Study status: ☒full-time ☐part-time	Status of the course: ☐ basic ☒ obligatory ☒professional ☐elective	Semester: 1	☒winter semester ☐spring semester
description applies from the academic year (year):		2019/2020	Catalog number : ROL-ER-1S-03Z-04

Coordinator of the course[5]	Dr inż. Mariusz Lewandowski, prof. SGGW		
Teachers :	Faculty staff and/or PhD students of Department of Plant Pathology and Department of Applied Entomology		
Conducting unit:	Faculty of Horticulture, Biotechnology and Landscape Architecture, Department of Applied Entomology and Department of Plant Pathology,		
Unit ordering classes :	Faculty of Agricultural and Biology		
Goals and description of the course:	**Goal:** Knowledge of diseases and pests of crop plants, methods of their elimination and biological methods of plant protection accepted in organic farming, rules for creating and maintaining biological balance on the organic farm **Description**: Characteristics of groups of plant pathogens: viroids, viruses, phytoplasmas, bacteria, fungi and parasitic seed plants. Pathogenesis of plant disease. Plant disease epidemiology. Integrated methods of the plant pathogens control and plant protection management. Biotic and abiotic factors influencing the abundance of pests in the field crops. Characteristics of pest taxons occurring in agroecosystems. Integrated pest management in sustainable agriculture. Laboratory classes - The examples of plant diseases caused by viroids, viruses, phytoplasmas, bacteria, Protozoa (Plasmodiophorida), Chromista (Oomycota) and fungi (Chytridiomycota, Ascomycota, Basidiomycota), disease cycles, disease symptoms, characteristics of plant pathogens. Characteristics of major pest species infesting crops on organic farms: systematic biology and harmfulness. Adaptation of integrated pest management systems to organic crops		
Didactic forms, number of hours :	W - lecture, hours 30 h LC - laboratory exercises, hours 15 h		
Teaching methods :	Multimedia presentations, work groups, laboratory exercises, projects, discussion		
Formal requirements and initial assumptions :	Botany, zoology, ecology, chemistry. The student has general knowledge in the field of chemistry, botany, animal systematics and ecology		
Learning outcomes :	Kowledge: W1 -. knows the biology of the main pathogens and pests of crop plants W2 – knows the issues related to plant protection organization W3 – knows methods of control of major diseases and pests of plants	Skills: U1 – can identify pests and monitor their numbers U2 - can identify the most important plant diseases based on the etiology and symptoms	Ccompetence : K1 – is ready to plan the protection of organic crops against pathogens and pests
The verification way of learning outcomes :	Effects W1, W2, W3, K1 - written exam Effects U1, U2, K1 – periodical tests from practical classes		
Form of documentation achieved learning outcomes:	The periodic written tests during laboratory class and written final exam. Laboratory written tests with an assessment and final written exams are kept in the archives.		
Elements and weights with the impact on the final grade:	The evaluation consist: the evaluation of the laboratory tests - 30%, the written exam – 70 %. For passing the subject student needs all positive grades from laboratory works and the final exam.		
Place for course:	Lecture room and laboratories equipped with multimedia. During laboratory class students use fresh plant material withs disease symptoms, and make microscopical examination pathogens structures (ethiological signs). Labs are equipped with stereomicroscopes and light microscopes on all tables.		

Basic and complementary literature:

Agrios G.N. 2005. Plant Pathology, Fifth ed. Elsevier Academic Press, Burlington, MA. 922 pp
Campbell R. 1989. Biological control of microbial plant pathogens. Cambridge Univ. Press.
Janse J.D. 2005. Phytobacteriology: principles and practice. CABI Publishing
Mukerji K. G., Garg K. L. 1988. Biocontrol of plant diseases. CRC Press. vol.1-2
L.M. Smith, J. Dunez, R.A. Lelliott, D.H. Phillips and S.A. Archer (eds.): European handbook of plant diseases. Blackwell Scientific Publications, Oxford 1988
Trigiano R.N., Windham M.T., Windham A.S. (eds.) 2004. Plant Pathology. Concepts and Laboratory Exercises. CRS Press Boca Raton
Paskin R., Dhawan A.K.. 2009.Integrated pest management: Innovation-Development Process. Springer
Krebs J. C. 2009. Ecology. Benjamin Cummings,
Hagler J.R., 2000 Biological control. In: Rechcigl J.E., Rechcigl N.A. 2000. Insect pest management. Techniques for environmental protection. Lewis Publ. Boca Raton, London, New York, pp. 207-241.
Gerson U., Smiley R.L., Ochoa R. 2003. Mites (Acari) for Pests Control. Blackwell Science Ltd, Oxford, UK.
Hoy M.A., Herzog D.C. 1985. Biological Control in Agricultural IPM ystems. Academic Press, INC.

Comments

Quantitative indicators characterizing the module / course:

Estimated total number of student work hours (contact and own work) necessary to achieve the expected learning outcomes – based on this, complete the ECTS field:	75
The total number of ECTS points that a student obtains in classes requiring direct participation of academic teachers or other persons conducting classes (consultations, cooperation with a supervisor):	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 effects for the study program for the field of study	The impact of the course on the field effect *)
Knowledge –W1	knows the biology of the main pathogens and pests of crop plants	K_W01; K_W02; K_W05	1; 1; 2
Knowledge –W2	knows the issues related to plant protection organization	K_W11	2
Knowledge –W3	knows methods of control of major diseases and pests of plants	K_W05; K_W07; K_W08; K_W10; K_W12	2; 2; 2; 1; 3
Skills –U1	can identify pests and monitor their numbers	K_U12; K_U13; K_U14	2; 2; 2
Skills – U2	can identify the most important plant diseases based on the etiology and symptoms	K_U13; K_U14	2; 2
Competence –K1	is ready to plan the protection of organic crops against pathogens and pests	K_S03; KS_04; KS_06	2; 2; 1

*)

3 - advanced and detailed,

2 - significant,

1 - basic,