

Course name:

PLANT PROTECTION

ECTS	5
Course status	complementary
Course final assessment/evaluation of outcomes	completion with grade
Prerequisites	no prerequisites

Main field of study:

A G R I C U L T U R E

Profile of study	General-academic
The code of studies (education level)	Bachelor / master
Semester of studies	winter/ spring
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Agriculture and Economics
Name of department offering the course	Department of Microbiology and Biomonitoring
Course coordinator	prof. Dariusz Ropek

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:			
<i>PP_W01</i>	<i>fundamentals of plant protection</i>	<i>RO1_W14</i>	<i>RR</i>
<i>PP_W02</i>	<i>main groups of plant pests, weeds and pathogens</i>	<i>RO1_W14</i>	<i>RR</i>
<i>PP_W03</i>	<i>methods of pesticide application</i>	<i>RO1_W13</i>	<i>RR</i>
<i>PP_W04</i>	<i>safe use of pesticides and their effect on environment</i>	<i>RO1_W18</i>	<i>RR</i>
SKILLS – student is able to			
<i>PP_U01</i>	<i>determine weeds, pests and pathogens of crops</i>	<i>RO1_U22</i>	<i>RR</i>
<i>PP_U02</i>	<i>choose the optimal method of pest control</i>	<i>RO1_U22</i>	<i>RR</i>
SOCIAL COMPETENCE- student is ready to:			
<i>PP_K01</i>	<i>gather and interpret relevant data</i>	<i>RO1_K03</i>	<i>RR</i>
<i>PP_K01</i>	<i>communicate information, ideas, problems and solutions</i>	<i>RO1_K08</i>	<i>RR</i>

Teaching contents:

Lectures	20	hours
Topics of lectures	1-2. Introduction to plant protection, aim of the subject, basic terms, relation to other subjects. 3. Plant pathogens: viruses, bacteria: symptoms, structure, transmission, vectors, disease cycle, detection, methods of plant protection. 4-5. Plant pathogens: fungi: symptoms, structure, disease cycle, detection, methods of plant protection. 6-7. Plant pests: nematodes, mites, slugs, mammals - characteristics, biology, economically important species. 8-9. Plant pests: insects: characteristics, biology, economically important species. 10-11. Monitoring of pests and diseases in plant protection. Chemical plant protection of pest and diseases - pesticides, composition, use, efficiency, legislation. Environmental impact of plant protection. 12-13. Non-chemical plant protection of pests and diseases - good agricultural practice. Biological plant	

	protection - principles, parasitoids, pathogens, conditions for use, efficiency. 14-16. Positive and negative aspects of weed occurrence in agroecosystems 17-18. Chemical weed control. Herbicides - their composition, use, efficiency, legislation. Impact of herbicides on environment. 19-20. Non-chemical weed control. Cultural, mechanical and alternative ways to manage weeds in the crops.		
Accomplished learning outcomes	PP_W01, PP_W02, PP_W03, PP_W04		
Verification methods, rules and criteria of outcome assessment	written exam – test and problem questions. Share in final grade 50%		
Classes		15	hours
Topics of classes	1-2. Diseases and pests of cereals and grasses. 3-4. Diseases and pests of potato and sugar beet. 5-6. Diseases and pests of pea, bean, soya, alfalfa, clover and other forage crops. 7-8. Diseases and pests of technical crops. 9-10. Storage diseases and pests 11-15 Weeds: their identification, biological and ecological characteristics. Selection of herbicides to their control.		
Accomplished learning outcomes	PP_U01, PP_U02, PP_K01, PP_K01,		
Verification methods, rules and criteria of outcome assessment	Forming grades: Assessment of tests and reports of laboratory exercises. Final grade: average of forming grades obtained in the class. Participation in the final assessment 40%		
Field trip		10	hours
Topics of field trip	1-5. Determination of pest and diseases in the field conditions. 6-10. Determination of weeds in the field conditions.		
Accomplished learning outcomes	PP_U01, PP_U02, PP_K01, PP_K01		
Verification methods, rules and criteria of outcome assessment	Assessment of the field trip report. Share in final grade 10%		

References:

Basic	<i>Hajek, Ann E. Natural Enemies: An Introduction to Biological Control. Cambridge University Press, 2004.</i> <i>Paskin R., Dhawan A.K. 2009. Integrated pest management: Innovation-Development Process. Springer</i> <i>Agrios G. N.: Plant Pathology. Elsevier Ltd. Oxford, Elsevier Ltd. Oxford, 2005,</i>
Supplementary	<i>Ropek D. Plant protection. [in] Agroecology [red.] Ropek D. Publishing House of the University of Agriculture in Krakow. Kraków 2014. ss. 101-116..</i> <i>Hagler J.R., 2000 Biological control. In: Rehcigl J.E., Rehcigl N.A. 2000. Insect pest management. Techniques for environmental protection. Lewis Publ. Boca Raton, London, New York, pp. 207-241.</i>

Structure of learning outcomes:

Discipline: R – Agricultural science	5	ECTS*
Discipline: # (provide appropriate symbol - if the course relates to more than one academic discipline)	...	ECTS*

Structure of student activities:

Contact hours	50	hours	2,0	ECTS*
including:	lectures	20	hours	
	Classes and seminars	25	hours	
	consultations	3	hours	
	participation in research	.	hours	
	mandatory traineeships	.	hours	
	Participation in examinations	2	hours	
e-learning	...	hours		

Students own work	75	hours	3,0	ECTS*
-------------------	----	-------	-----	-------

** stated with an accuracy to 0.1 ECTS, where 1 ECTS = 25 - 30 hours of classes

academic discipline code: RZ - animal science and fishery, PB - biological sciences, etc.