Course name:

RESISTANCE TO PESTICIDES IN AGRICULTURE

ECTS	**3**
Course status	**complementary**
Course final assessement/evaluation of outcomes	**exam**
Prerequisites	**Plant Protection**

Main field of study:

AGRICULTURE, AGRONOMY

Profile of study	**General-academic**
The code of studies (education level)	**SM (master)**
Semester of studies	**winter**
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 Agroecology and Crop Production**
Course coordinator	**Agnieszka Synowiec**

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:			
RPA_W1	knows the sources and types of air, water and soil pollutants, and their effects on the environment	RO2_W12	RR
SKILLS – student is able to:			
RPA_U1	uses scientific literature in English and demonstrates knowledge of professional vocabulary	R2A_U03	RR
RPA_U2	chooses the right solutions to improve the condition of the environment and improve production and economic efficiency in agriculture	R2A_U13	RR
RPA_U3	can assess the impact of agricultural activities on the environment	R2A_U16	RR
SOCIAL COMPETENCE- student is ready to:			
RPA_K1	uses knowledge and skills to prioritize efficient operation	R2A_K03	RR
RPA_K2	is aware of the environmental burdens resulting from crop production	R2A_K06	RR

Teaching contents:

Lectures		**15**	**hours**
	Pesticides and their importance in modern agriculture, history of pesticides Selection as a main tool of pesticide resistance		

Topics of the lectures	Types of pesticide resistance Mechanisms of pesticide resistance Main agricultural pests resistant to pesticides Management of pesticide resistance Prevention of pesticide resistance development
Accomplished learning outcomes	*RPA_W1, RPA_U1, RPA_U2, RPA_U3, RPA_K1, RPA_K2*
Verification methods, rules and criteria of outcome assessment	*test (50%)*

Classes	**10**	**hours**

Topics of the classes	Modes of action of pesticides HRAC, FRAC, IRAC Resistance testing Effective doses and resistance index using statistical software R Predicting the development of resistance - case study
Accomplished learning outcomes	*RPA_W1, RPA_U1, RPA_U2, RPA_U3, RPA_K1, RPA_K2*
Verification methods, rules and criteria of outcome assessment	*projects (50%)*

Seminars	**…**	**hours**

Topics of the seminars	
Accomplished learning outcomes	*symbol of learning outcomesof the seminars*
Verification methods, rules and criteria of outcome assessment	*together with participation in the final asessement (in %)*

References:

Basic	*Insecticides Resistance https://www.intechopen.com/books/insecticides-resistance;* *Weed Resistance to Herbicides https://www.intechopen.com/books/herbicide-resistance-in-weeds-and-crops/weed-resistance-to-herbicides*
Supplementary	*scientific publications provided by the teacher*

Structure of learning outcomes:

Discipline: # AH	*3*	ECTS**
Discipline: #		ECTS**

Structure of student activities:

Contact hours		31	hours	1,2	ECTS**
including:	lectures	15	hours		
	classes and seminars	10	hours		
	consultations	4	hours		
	participation in research	…	hours		
	mandatory trainerships	…	hours		

participation in examinations	2	hours		
e-learning	…	hours	…	ECTS**
student own work	45	hours	1,8	ECTS**

Syllabus valid from the academic year 2021/2022

*** where 10 hours of classes = 1 ECTC (in case of 15 h → 2 ECTS)**

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

academic discipline code: RR - agriculture and horticulture