



SZKOŁA GŁÓWNA  
GOSPODARSTWA  
WIEJSKIEGO

## Biological Pest Control

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Course Offer for exchange students - second cycle studies, including uniform master studies (MA programmes)		<b>Didactic cycle</b> 2024/25	
<b>Speciality</b> -		<b>Subject code</b> PWMPWM2S_D.B100000P.06322.24	
<b>Organizational unit</b> Course Offer for exchange students		<b>Lecture languages</b> english	
<b>Study level</b> second cycle studies, including uniform master studies (MA programmes)		<b>Mandatory</b> Elective subjects	
<b>Study form</b> full-time studies		<b>Block</b> Basic subjects	
<b>Education profile</b> General academic		<b>Disciplines</b>	
<b>Coordinator</b>	Michał Reut		
<b>Teacher</b>	Michał Reut		
<b>Period</b> Winter semester	<b>Examination</b> Exam	<b>Number of ECTS points</b> 3	
	<b>Activities and hours</b> Lecture: 10 Laboratory exercises: 18 Field exercises: 2		

## Goals

Code	Goal
C1	The scope of issues covered in this subject aims to obtain knowledge about economically important insects and other arthropods by students. After finishing the course, students can determine the advantages of beneficial arthropods in the horticultural environment. Through the acquired knowledge, they will be able to set up the breeding of beneficial arthropods and undertake actions supporting biodiversity and protecting endangered and beneficial species. The course will be carried out as lectures, during which pollinating insects and enemies of natural pests will be discussed, including arthropods sold in the form of biopreparations for the needs of biological plant protection. Students will get acquainted with the characterization of biological control agents for pests and with major strategies of biological control used in various production systems. During the lectures, the following issues will be discussed: ecological principles of biological control; conservation biological control; classical biological control; augmentation of natural enemies; examples of predators and parasitoids species used in biological control; micro-organisms and biopesticides used in biological control; limitations of biological pest control in practice.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	Knows and understands the assumptions of biological control		Test (written or computer based)
W2	Knows the biology of the most important natural enemies and understands the interactions between them and their hosts		Test (written or computer based)
W3	Knows the major strategies of biological control used in various production systems		Test (written or computer based)
<b>Skills - Student can:</b>			
U1	Can recognize economically important species of beneficial arthropods		Oral credit, Report, Test (written or computer based)
U2	Can choose the strategies of biological control for different horticulture crops		Oral credit, Report, Test (written or computer based)
<b>Social competences - Student is ready to:</b>			
K1	Is ready to design protection for some horticulture crops based on the beneficial organisms		Oral credit, Report, Test (written or computer based)

## Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Pollinating insects; ecological principles of biological control; conservation biological control; classical biological control; augmentation of natural enemies; predators and parasitoids species used in biological control; micro-organisms and biopesticides used in biological control; limitations of biological pest control in practice.	W1, W2, W3, K1	Lecture

2.	Limitations of biological pest control in practice.	U1, U2, K1	Laboratory exercises
3.	Insects identification	U1, U2, K1	Field exercises

### Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Discussion, Analysis of source materials
Laboratory exercises	Case study, Teamwork, Individual work, Laboratory (experiment), learning by experiment
Field exercises	Field observations

Activities	Examination method	Percentage
Lecture	Test (written or computer based)	70%
Laboratory exercises	Report	20%
Field exercises	Oral credit	10%

Activities	Credit conditions
Lecture	To pass the subject student needs a positive grade from laboratory works and the final exam: 51-60% - 3; 61-70% - 3,5; 71-80% - 4; 81-90 - 4,5; 91-100 - 5. Final written exams are kept in the archives.
Laboratory exercises	Completion of practical exercises in the form of reports from experiments
Field exercises	Discussion during field class

### Literature

#### Obligatory

1. Paskin R., Dhawan A.K.. 2009. Integrated pest management: Innovation-Development Process. Springer
2. 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.
3. Gerson U., Smiley R.L., Ochoa R. 2003. Mites (Acari) for Pests Control. Blackwell Science Ltd, Oxford, UK.

### Calculation of ECTS points

Activity form	Activity hours*
Lecture	10
Laboratory exercises	18
Field exercises	2
Preparation for the test	30
Preparing a report	30

<b>Student workload</b>	<b>Hours</b> 90
<b>Number of ECTS points</b>	<b>ECTS</b> 3

\* hour means 45 minutes