

## Description of the education module/course (syllabus)

Course name:	<b>Biological control</b>	<b>ECTS</b>	<b>1,0</b>
Translation of the course name into English:	-		
Study field:	General Horticulture		

Language of lectures:	English	Study level: Master of science	
Study form:	<input checked="" type="checkbox"/> stationary <input type="checkbox"/> extramural	Status of lectures:	<input type="checkbox"/> primary <input type="checkbox"/> obligatory <input checked="" type="checkbox"/> directional <input checked="" type="checkbox"/> facultative
		Semester number: 2	<input checked="" type="checkbox"/> winter semester <input type="checkbox"/> spring semester
Academic year from which the description applies		<b>2021/2022</b>	Catalog number: <b>OGR-O2-S-2216.29 ang</b>

Course coordinator:	Dr hab. Mariusz Lewandowski		
Lecturers:	Dr hab. Mariusz Lewandowski		
Unit running the course:	Department of Applied Entomology		
Unit ordering the course:	Faculty of Horticulture		
Assumptions, objectives and description of the course:	<p>The scope of issues covered in this subject is aimed at obtaining knowledge about economically important insects and other arthropods by students. After finishing the course, students will be able to determine the advantages of beneficial arthropods occurrence in the /horticultural environment. Through the acquired knowledge, they will be able to set up a 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 a characterization of biological control agents of 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.</p>		
Didactic forms, number of hours:	Lectures; number of hours 15		
Teaching methods:	Lecture, multimedia presentation, discussion		
Formal requirements and prerequisites:	Basic information on pests in horticulture crops and methods of plant protection		
Learning outcomes:	<p>Knowledge:</p> <p>W_01 - knows and understands the assumptions of biological control</p> <p>W_02 - knows the biology of the most important natural enemies and understands the interactions them and their hosts</p> <p>W_03 - know the major strategies of biological control used in various production systems</p>	<p>Skills:</p> <p>U_01 – can recognize economically important species of beneficial arthropods</p> <p>U_02 - can choose the strategies of biological control for different horticulture crops</p>	<p>Competences:</p> <p>K_K01 - is ready to design protection of some horticulture crops based on the beneficial organisms</p>
The way of verification of learning outcomes :	Effects all – Short-exams		
Form of documentation of achieved learning outcomes :	Short-exams protocol		
Elements and weights affecting the final grade:	Short-exams protocol 100%		
Place of classes:	Department's classrooms		
Basic and supplementary literature :	<ol style="list-style-type: none"> <li>1. Paskin R., Dhawan A.K.. 2009. Integrated pest management: Innovation-Development Process. Springer</li> <li>2. Krebs J. C. 2009. Ecology. Benjamin Cummings,</li> <li>3. 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.</li> <li>4. Gerson U., Smiley R.L., Ochoa R. 2003. Mites (Acari) for Pests Control. Blackwell Science Ltd, Oxford, UK.</li> <li>5. Hoy M.A., Herzog D.C. 1985. Biological Control in Agricultural IPM systems. Academic Press, INC.</li> </ol>		
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:	<b>30 h</b>
The total number of ECTS points that a student receives in classes requiring direct participation of academic teachers or other lecturers:	<b>0,5 ECTS</b>

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 <sup>*)</sup>
Knowledge - W_01	- knows and understands the assumptions of biological control	K_W03; K_W04; K_W09	2; 1; 1
Knowledge - W_02	knows the biology of the most important natural enemies and understands the interactions them and their hosts	K_W03; K_W07	2; 2
Knowledge - W_03	know the major strategies of biological control used in various production systems	K_W04; K_W06	2; 2
Skills - U_01	can recognize economically important species of beneficial arthropods	K_U03; K_U06	2; 1
Skills - U_02	can choose the strategies of biological control for different horticulture crops	K_U04; K_U05	2; 1
Competences – K_K01	K_K01 - is ready to design protection of some horticulture crops based on the beneficial organisms	K_K01; K_K04	2; 1

\*)

3 – znaczący i szczegółowy,

2 – częściowy,

1 – podstawowy,