

Karta opisu zajęć (syllabus)

Field or fields of study	Plant Protection and Phytosanitary Control
Name of the training module	Communities of insects
Language of instruction	English
Type of the training module (obligatory/optional)	optional
Level of the training module	2nd degree, full-time study
Year of study	II
Semester	3
Number of ECTS credits with a division into contact/noncontact	3 (1.7/1.3)
Title/degree, name and surname of the person in charge	dr hab. Izabela Kot, associate prof.
Unit offering the subject	Department of Plant Protection
Aim of the module	A student must be familiar with classification of social insects, their morphology, biology and principals of behavior
Learning outcomes for the module are the description of the intended learning outcomes, skills and social competences that a student should achieve after the completion of the module should be provided.	Knowledge:
	1. Student knows the classification of social insects, eusocial insect biology, factors formed function of insects communities.
	2. Student has a basic knowledge of the hierarchy of social insect societies
	Skills:
	1. Can explain the functioning of eusocial systems.
Social competences:	1. Can interpret information concerning the behavior of social insects in order to clarify the interaction of individuals in society.
Preliminary and additional requirements	General entomology, Applied entomology
Contents of the training module	Lectures will contain the classification of social insects, evolution of eusocial systems, the division of labor and the self-organization of insect societies, adaptation to social lives, the co-existence of social insects with other insects and plants, communication in communities of insects (identifying, sharing food and cleaning, recruitment, alarm and aggregation), the symbiosis of social insects, coexistence of social insects with other arthropods and plants. Classes will contain: morphology and development of eusocial insects - wasps (Vespidae), bumblebees (<i>Bombus</i> spp.), ants (Formicidae), termites (Isoptera), bees (Apidae), types and methods of nests construction, practical knowledge of the colonies functioning on the example of <i>Apis mellifera</i> (L.).
Recommended and obligatory reading	Recommended reading list

list	<ol style="list-style-type: none"> 1. Bellman H., 2011. Błonkówki: pszczoły, osy i mrówki środkowej Europy [Hymenoptera: bees, wasps and ants of central Europe]. Multico Oficyna Wydawnicza, Warszawa. 2. Dorigo M., Stützle T. 2004. Ant colony optimization. MIT Press, Cambridge. 3. Tautz J. 2008. The buzz about bees: biology of superorganism. Heidelberg: Springer-Verlag, Berlin. 4. Wilson E. O. 1979. Społeczeństwa owadów [Communities of insects]. PWN, Warszawa 5. Wilson E. O. 2001. Owady społeczne. W: Socjobiologia [Communities of insects, in: Sociobiology]. Poznań: Zysk i S-ka Wydawnictwo s.c. 6. Wilson E. O. 2021. Opowieści ze świata mrówek [Stories from the world of ants]. Copernicus Center Press. <p>Supplementary reading list</p> <ol style="list-style-type: none"> 1. Goulson D., 2017. Żądła rządzą: moje przygody z trzmielami [Stings rule: my adventures with bumblebees]. Wyd. Marginesy, Warszawa. 2. Lisowski P., 2010. Tajemnice pszczelego ula [Secrets of the beehive]. Oficyna Wydawnicza "Alma-Press", Warszawa. 3. Pabis K., 2020. Prywatne życie mrówek [Private life of ants]. Wyd. Ringier Axel Springer, Warszawa.
The intended forms/activities/teaching methods	Theory in the form of lectures prepared as multimedia presentations; discussion; the student's own work; execution of the project; educational films
Methods of verification and documentation forms of the achieved learning outcomes	<p>K1, K2 - learning outcomes in terms of knowledge will be verified on the basis of a written test.</p> <p>S1 - skills will be verified on the basis of preparation of graded project.</p> <p>Sc1 - assessment of social skills will be verified on the basis of lecture and discussion.</p> <p>Documentation forms of the achieved learning outcomes: student's diary, written assignments</p>
Elements and weights influencing the final grade	<ol style="list-style-type: none"> 1. Grade of the written final test in the form of single-choice test and problem questions: 80%; 2. Assessment of exercises - assessment of the presented project: 20%. <p>Score thresholds for the test:</p> <p>91 – 100% 5</p> <p>81 – 90% 4,5</p> <p>71 – 80% 4</p> <p>61 – 70% 3,5</p> <p>51 – 60% 3</p>

	<p>The condition for taking the final test is a positive grade for the project. The final grade is a weighted average - final test (importance 8) and project grade (importance 2).</p> <p>Endpoints (weighted average): above 4,75: 5, 4,74 – 4,25: 4,5, 3,75 – 4,24: 4, 3,25 – 3,74: 3,5, 2,5 – 3,24: 3.</p>		
Workload in activities with direct participation of academic teachers	Form of classes	Number of hours	ECTS
	CONTACT		
	Lectures	15	0,60
	Courses	20	0,80
	Consultations	3	0,12
	Credit of multimedia presentations/projects	2	0,08
	Examination/credit	2	0,08
	Total contact	42	1,68
	NON-CONTACT		
	Preparation for courses	10	0,40
	Preparation for multimedia presentation	12	0,48
	Preparation for credits	10	0,40
	Total non-contact	32	1,28
	Total ECTS	74	2,96
Workload in activities with direct participation of academic teachers	<ul style="list-style-type: none"> - participation in lectures – 15 h - participation in auditorial classes – 10 h - participation in laboratory classes – 10 h - participation in consultation hours – 3 h - participation in credit of multimedia presentations - 2 h - presence at the examination – 2 h <p>Total 42 hours., which refers to 1.7 ECTS</p>		
Reference of module outcomes to field study outcomes	<p>Module outcomes code – Field study outcomes code</p> <p>K1 - OR_W03 K2 - OR_W03, K_W08 S1 - OR_U04 Sc1 - OR_K03</p>		