



No. \_\_\_\_\_ of \_\_\_\_\_

USAMV form 0101020103 (discipline code)

**SUBJECT OUTLINE****1. Information on the programme**

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca
1.2. Faculty	Agriculture
1.3. Department	III Environment and Plant Protection
1.4. Field of study	Agronomy
1.5. Cycle of study <sup>1</sup>	Bachelor
1.6. Specialization/ Study programme	Agriculture
1.7. Form of education	Full time

**2. Information on the discipline**

2.1. Discipline name		Entomology 1 (General Entomology)						
2.2. Course coordinator				Prof.dr. Oltean Ion				
2.3. Seminar/ laboratory/ project coordinator				Conf. dr. Florian Teodora				
2.4. Year of study	II	2.5. Semester	II	2.6. Evaluation type	continuous	2.7. Discipline status	Content <sup>2</sup>	DF
							Compulsoriness <sup>3</sup>	DI

**3. Total estimated time (teaching hours per semester)**

3.1. Hours per week - full time programme	4	out of which: 3.2. lecture	2	3.3. seminar/ laboratory/ project	2
3.4. Total number of hours in the curriculum	56	out of which: 3.5. lecture	28	3.6. seminar/laboratory	28
Distribution of the time allotted					hours
3.4.1. Study based on books, textbooks, bibliography and notes					22
3.4.2. Additional documentation in the library, electronic platforms and field experiences					10
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4. Tutorials					4
3.4.5. Examinations					10
3.4.6. Other activities					
3.7. Total hours of individual study	56				
3.8. Total hours per semester	112				
3.9. Number of credits <sup>4</sup>	4				

**4. Prerequisites (if applicable)**

4.1. curriculum-related	Not applicable
4.2. skills-related	Not applicable

**5. Conditions (if applicable)**

5.1. for the course	The course is interactive, students can ask questions about the content of the exhibition. The university discipline requires the observance of the starting and finishing time of the course. No other activities are tolerated during the lecture, the mobile phones being shut down.
5.2. for the seminar/	In practical works it is compulsory to consult the practical guide. Each student will carry out an individual activity of studying the biological material made available and described in the

laboratory/ project	tutor of Practical Works. The academic discipline is required throughout the duration of the works.
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## 6. Cumulated specific competences

Professional competences	<p>To know the agronomic language specific to the discipline of Entomology</p> <p>Understand the functioning of agroecosystems</p> <p>To recognize the main characters of external morphology of the systematic units of which the pest species belong</p> <p>To make the systematic classification of pests at the class and order level</p> <p>To recognize the symptomatology of the attack produced by the species of pests</p> <p>To understand the biological cycle of the main systematic units of which the pests are part</p> <p>To understand the impact of ecological factors on the dynamics of the numerical density of pests</p> <p>To master the general methods of preventing the occurrence and propagation of pests and the methods of combating pests</p> <p>To learn how to develop a pest control strategy in agricultural ecosystems</p> <p>Know the main groups of zoocides and their mode of action</p> <p>To perceive the impact of pesticides within an ecosystem</p>
Transversal competences	<p>To demonstrate the ability to develop integrated pest control schemes in agricultural crops</p> <p>To be able to think about scientific activities regarding the study of the bioecology of a pest</p> <p>To show concern regarding professional improvement in the field of plant protection</p> <p>To participate in the research activities in the experimental stations of the discipline</p>

## 7. Discipline objectives (based on the cumulated specific competences)

7.1. General objective	To acquire the knowledge regarding the principles of integrated pest control in agricultural crops in the context of greening production and protecting ecosystems
7.2. Specific objectives	<p>Understand the importance of plant protection against the attack by pests</p> <p>To know the ecology of the main groups of pests (insects, mites and nematodes)</p>

## 8. Content

8.1. COURSE Number of hours - 28	Teaching methods	Observation
8.1.CURS Number of hours - 28	Lecture	
Insect Ecology: abiotic factors (temperature, humidity, light), edaphic factors, biotic factors (food, predators and natural pests, epizootics), antipyrethic factors.		3 lecture
Population ecology and ecosystem ecology: population ecology: population and its characteristics; population dynamics; types of population dynamics.		1 lecture
Methods to prevent the mass emergence of animal pests: phytosanitary quarantine measures, agrofitotechnical methods, cultivation of resistant varieties and hybrids		3 lecture
Methods to combat animal pests: mechanical methods, physical methods, biotechnical		3 lecture
Ecomoni: classification and use of ecomes within agroecosystems.		2 lecture
Chemical pest control: the benefits and side effects of chemotherapy, notions of phytopharmacy, zoocide classification, principles of control, integrated crop protection.		2 lecture

8.2. PRACTICAL WORKS Number of hours – 28	Teaching methods	Observation
Morphology of the adult insect: the head and appendages of the head (antennae and parts of the buccal apparatus).		2 lab work
Morphology of the adult insect: the thorax and the appendage of the thorax (legs and wings).	Theoretical presentation of practical works	2 lab work
Morphology of the adult insect: abdomen and appendages of the abdomen (circles, cornices, external genitalia).		1 lab work
Insect anatomy and physiology: tegument and tegument formations, internal organization of insects.		1 lab work
Developmental stages of the insect: breeding types, egg and tip, larval stage (morphology and types), pupa stage (morphology and types).		2 lab work
General characteristics of mites, molluscs, nematodes and vertebrates.		2 lab work
Types of damage caused by pests.		1 lab work
The record of the pests, norms of appreciation of the attack.		1 lab work
Determination of pests by morphological-taxonomic and trophic criterion.		1 lab work
Collection, preparation and conservation of insects as well as plants attacked by various pests..		1 lab work
<p><i>Compulsory bibliography:</i></p> <ol style="list-style-type: none"> <li>BUNESCU H., TEODORA FLORIAN, 2014, <i>Zoologie</i>, Editura Bioflux, Cluj-Napoca</li> <li>BUNESCU H., TEODORA FLORIAN, 2017, <i>Entomologie - manual didactic</i>, Ed. AcademicPres, Cluj-Napoca</li> <li>OLTEAN I., MONICA PORCA, GHIZDAVU I., 2004, "Entomologie generală", Editura Digital Data.</li> <li>PERJU T., I. OLTEAN, ASEA TIMUȘ, 2001, "Acarieni și nematozi dăunători ai plantelor cultivate", Editura Poliam.</li> <li>PORCA MARIA MONICA, I. OLTEAN, 2004, "Ghid practic pentru recunoașterea și combaterea dăunătorilor plantelor de cultură", Ministerul Agriculturii, Pădurilor și Dezvoltării Rurale, Agenția Națională de Consultanță Agricolă, Editura Fundația Națională "Satul Românesc" București</li> <li>ROȘCA I., I. OLTEAN, I. MITREA, M. TĂLMACIU, D.I. PETANEC, H.Ș. BUNESCU, ISTRATE RADA, TĂLMACIU NELA, C. STAN, MICU LAVINIA MĂDĂLINA, 2011, "Tratat de Entomologie, generală și specială", Editura "Alpha MDN".</li> </ol> <p><i>Optional bibliography:</i></p> <ol style="list-style-type: none"> <li>Colecția de reviste "Protecția Plantelor" – editată de SPP Cluj</li> <li>Colecția de reviste "Sănătatea Plantelor" – București</li> <li>Colecția de reviste "Agro buletin AGIR" – editată de AGIR Timișoara</li> </ol>		

**9. Corroborating the discipline content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field**

For the continuous updating of the content of the courses, with the most current topics and practical problems, the teachers participate in the biannual conferences of the Transylvanian Plant Protection Society, where they meet with the specialists from the County Phytosanitary Units, with the representatives of the pesticide producing companies and with the farmers, being debated current and prospective issues in the field of plant protection.

**10. Evaluation**

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
<b>10.4. Course</b>	Knowing the impact of ecological factors (abiotics and biotics) on the dynamics of pest populations. Knowledge of methods of preventing and combating pests in agricultural crops.	continuos (VP)	70%
<b>10.5. Seminar/Laboratory</b>	Knowledge of the external morphology characters of the insects and their systematic classification.	3 continuos	20%

	Knowledge of the general characteristics of other sietematic units (mites, nematodes and gastropods). Knowing the types of damage		
<b>10.6. Minimum performance standards</b>			

- 1 Cycle of studies - choose one of the three options: Bachelor/Master/Ph.D.
- 2 according to the educational plan
- 3 Discipline status (compulsoriness) - choose one of the options - DI (compulsory discipline) DO (optional discipline) DFac (facultative discipline).
- 4 One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Filled in on  
04.09.2019

Course coordinator  
Prof. dr. OLTEAN ION

Laboratory work/seminar coordinator  
Conf. dr. FLORIAN TEGDORA

Approved by the  
department on  
05.09.2019

Head of the Department  
Prof. dr. IOAN OROIAN