



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

USAMV form 0102030102 (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	Montanology
1.7. Form of education	Full time

## 2. Information on the discipline

2.1. Discipline name	Entomology 2 (Special Entomology)							
2.2. Course coordinator	Conf. dr. Florian Teodora							
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					30
3.4.2. Additional documentation in the library, electronic platforms and field experiences					20
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					20
3.4.4. Tutorials					4
3.4.5. Examinations					10
3.4.6. Other activities					
3.7. Total hours of individual study	84				
3.8. Total hours per semester	140				
3.9. Number of credits <sup>4</sup>	5				

## 4. Prerequisites (if applicable)

4.1. curriculum-related	Botany, Physiology, General Entomology
4.2. skills-related	The student must have knowledge regarding the functioning of ecosystems and agroecosystems

## 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	In practical works it is compulsory to consult the practical guide. Each student will carry out

seminar/ laboratory/ project	an individual activity of studying the biological material made available and described in the 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 specific agronomic language for the discipline of Entomology</p> <p>Understand the functioning of agro-ecosystems</p> <p>To recognize the identification of the main pest in agricultural crops</p> <p>To recognize the symptomatology of the product's attack on the pest species</p> <p>To know the life cycle of pests</p> <p>Understand the impact of pests on crops</p> <p>Master the prevention and control methods specific to each pest</p> <p>The way of elaborating a control strategy specific to each distributor</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	
<b>Polyphagous pests: spread, biology, ecology and control</b> <i>Gryllotalpa gryllotalpa</i> , <i>Dociostaurus maroccanus</i> , <i>Calliptamus italicus</i> , <i>Anoxia villosa</i> , <i>Melolontha melolontha</i> , <i>Agriotes spp.</i> , <i>Agrostis segetum</i> , <i>Xestia C-nigrum</i> , <i>Autographa gamma</i>		2 lecture
<b>The pests of grain crops: spreading, biology, ecology and control</b> <i>Haplothrips tritici</i> , <i>Limothrips denticornis</i> , <i>Sitobion avenae</i> , <i>Stenothrips graminum</i> , <i>Schizaphis graminum</i> , <i>Sitobion avenae</i> , <i>Eurygaster spp.</i> , <i>Aelia spp.</i> , <i>Oulema melanopa</i> , <i>Anisoplia spp.</i> , <i>Chlorops pumilionis</i> , <i>Oscinella spp.</i> , <i>Delia coarctata</i> , <i>Opomyza florum</i> , <i>Siteroptes graminum</i> , <i>Anguina tritici</i>		2 lecture
<b>Pests of grassland crops: spread, biology, ecology and control</b> <i>Polysarcus denticaudus</i> , <i>Calliptamus italicus</i> , <i>Macrosteles padi</i> , <i>Rhizotrogus aequinoctialis</i> , <i>Cerapterix graminis</i> , <i>Hypogymna morio</i> , <i>Amaurosoma flavipes</i> , <i>Stenotarsonemus spirifex</i> .		2lecture
<b>Pests of maize crops: spread, biology, ecology and control</b> <i>Diabrotica virgifera-virgifera</i> , <i>Agriotes spp.</i> , <i>Selatosomus latus</i> , <i>Ostrinia nubilalis</i> , <i>Scotia segetum</i> , <i>Microtus arvalis</i> , <i>Cricetus cricetus</i> .		1 lecture
<b>Pests of legumes grown for food and feed purpose: spread, biology, ecology and control</b> <i>Odontothrips pisi</i> , <i>Bruchothrips niger</i> , <i>Kakothrips pisivorus</i> , <i>Acyrtosiphum pisi</i> , <i>Bruchopagus spp.</i> , <i>Acanthoscelides obtecus</i> , <i>Bruchus pisorum</i> , <i>B. rafimanus</i> , <i>B. lentis</i> , <i>Bruchidius unicolor</i> , <i>Sitona spp.</i> , <i>Apion apricans</i> , <i>A. loti</i> , <i>Otiorrhynchus ligustici</i> , <i>Phytodecta fornicata</i> , <i>Subscoecina 24-punctata</i> , <i>Autographa gamma</i> , <i>Cydia nigricana</i> , <i>Contarinia loti</i>		2 lecture

<p><b>Pests of tuberculosis and root crops grown for food and feed purpose: spread, biology, ecology and control</b> <i>Aphis fabae</i>, <i>Chaetocnema tibialis</i>, <i>Tanymecus palliatus</i>, <i>Pegomyia betae</i>, <i>Melolontha melolontha</i>, <i>Leptinotarsa decemlineata</i>, <i>Phorodon humuli</i>, <i>Heterodema schachtii</i>, <i>Globodera rostochienis</i>, <i>Ditylenchus dipsaci</i>.</p>		1 lecture
<p><b>Pests of fruit trees and shrubs: spread, biology, ecology and control</b>  <i>Panonychus ulmi</i>, <i>Quadraspidotus perniciosus</i>, <i>Epidiaspis leperii</i>, <i>Parthenolecanium corni</i>, <i>Eriosoma lanigerum</i>, <i>Hyalopterus pruni</i>, <i>Aphis grossulariae</i>, <i>Hoplocampa spp.</i>, <i>Cydia pomonella</i>, <i>Cydia funebrana</i>, <i>Rhagoletis cerasi</i>, <i>Arvicola terrestris</i>, <i>Lepus europaeus</i>, <i>Pteronous ribesii</i>, <i>Byturus tomentosus</i>, <i>Anthonomus pomorum</i>, <i>Anthonomus rubi</i>, <i>Coenorhinus germanicus</i>, <i>Zeuzera pyrina</i>, <i>Cossus cossus</i>, <i>Synanthedon tipuliformis</i>, <i>Euproctis chrysorrhoea</i>, <i>Lymantria dispar</i>, <i>Lymantria monacha</i>, <i>Malacosoma neustria</i>, <i>Aporia crataegi</i>, <i>Operophtera brumata</i>, <i>Leucoma salicis</i>, <i>Orgyia antiqua</i>, <i>Tortrix viridana</i>, <i>Hyphantria cunea</i>, <i>Galerucella luteola</i>, <i>Lytta vasicatoria</i>.</p>		2 lecture
<p><b>Pests of shrubs: spread, biology, ecology and control</b>  <i>Zeuzera pyrina</i>, <i>Cossus cossus</i>, <i>Synanthedon tipuliformis</i>, <i>Euproctis chrysorrhoea</i>, <i>Lymantria dispar</i>, <i>Lymantria monacha</i>, <i>Malacosoma neustria</i>, <i>Aporia crataegi</i>, <i>Operophtera brumata</i>, <i>Leucoma salicis</i>, <i>Orgyia antiqua</i>, <i>Tortrix viridana</i>, <i>Hyphantria lynea</i>, <i>Galeriataea</i>, <i>Galeriatta corya</i>,</p>		2 lecture

8.2. PRACTICAL WORKS		Teaching methods	Observation
Number of hours – 28			
Pests of crops of grain, description, attacked plants and harmful way.			2 lab work
Pests of maize crops, description, attacked plants and manner of damage.	Theoretical presentation of practical works		1 lab work
Pests of vegetation on meadows and natural grass, description, attacked plants and way of damage.		1 lab work	
Pests of perennial legume crops (alfalfa, clover, crack, potpourri), description, attacked plants and harmful way.		1 lab work	
Pests of annual legume crops (peas, beans, corn), description, attacked plants and pest mode.		1 lab work	
Pests of tuberculosis and root crops (food and feed), description, attacked plants and manner of damage.		1 lab work	
Pests of crops of technical plants and vegetables, description, attacked plants and manner of damage.		1 lab work	
Pests of plants from greenhouses, fungi, description, attacked plants and way of damage.		1 lab work	
Pests of fruit-bearing shrubs, description, attacked plants, and manner of damage.		3 lab work	
Pests of vines, description, attacked plants and manner of damage.		1 lab work	
Pests of stored products, description, attacked plants and manner of damage.		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>TEODORA FLORIAN, ION OLTEAN, 2018, <i>Entomologie specială - ISBN 978-606-8887-26-5</i> Editura Bioflux, 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.	Exam (E)	70%
<b>10.5. Seminar/Laboratory</b>	Knowledge of the external morphology characters of the insects and their systematic classification. Knowledge of the general characteristics of other sistematic units (mites, nematodes and gastropods). Knowing the types of damage	Continuous	30%
<b>10.6. Minimum performance standards</b>			

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

Filled in on  
04.09.2019

Course coordinator  
Conf. dr. FLORIAN TEODORA

Laboratory work/seminar coordinator  
Conf. dr. FLORIAN TEODORA

Approved by the  
department on  
05.092019

Head of the Department  
Prof. dr. IOAN OROIAN