

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES  
OF UKRAINE**


Faculty Plant protection, biotechnologies and ecology

**"APPROVED"**  
Dean of the Faculty  
Kolomietz Y.V.  
"23" May 2024

**"APPROVED"**  
at the meeting of Entomology, integrated pest  
management and plant quarantine  
Department

Minutes №.12\_of "22" May 2024 \_\_

Head of the Department

 Dolya M.M.

**"REVIEWED"**  
Guarantor of the AP Crop protection and plant quarantine

 Pikovskiy M.Y.

**CURRICULUM OF ACADEMIC  
DISCIPLINE  
Agricultural entomology**

Field of knowledge Agrarian sciences and food  
Specialty 202 Plant protection and quarantine  
Academic programme Plant protection and quarantine  
Faculty (Plant protection, biotechnologies and ecology)

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Kyiv – 2024

**1. Description of the course “Agricultural Entomology”**

Area of expertise, major, educational program, degree		
Level of education	<i>Bachelor</i>	
Specialty	202 Plant Protection and Quarantine	
Educational program	Plant Protection and Quarantine	
<b>Characteristics of discipline</b>		
Type of study	Mandatory	
Total hours	240	
Number of credits ECTS	8	
Number of modules	4	
Research paper	18	
Form of control	<i>exam</i>	
Indicators discipline for full-time and distance learning		
	Full time	Part time (Correspondence)
<b>Semester 7</b>		-
Semesters	7-8	-
Lectures	30	-
Practical	-	-
Laboratory	30	-
Independent working assignments	120	-
Personal working assignments	60	-
Number of weekly hours for full times students	3-4	-

<b>Semester 8</b>	Full time	Distance
Semester	7-8	-
Lectures	30	-
Practical	-	-
Laboratory	30	-
Independent working assignments	60	-
Personal working assignments	-	-
Number of weekly hours for full times students	3-4	-

## 2. Objectives and tasks of the course

### Objective:

the formation of professional knowledge and skills in higher education applicants,  
identification of pests by morphological features, types of damage plants, substantiating  
the expediency of carrying out individual protection measures of agricultural crops, taking  
into account the phytosanitary state of crops, peculiarities of biology and phenology of harmful phytophages.

### Tasks:

- to form theoretical knowledge of biology, morphology, pests, phenology of phytophages and to master the skill of their practical application;
- master the theoretical and practical skills of identifying species harmful insects;
- carry out phytosanitary monitoring of pests in crops agricultural crops and perennial plantations according to generally accepted methods;
- to develop and introduce into production efficient, ecologically safe measures to prevent or reduce crop losses from harmful insect's vegetation period of plants and during storage;
- to form theoretical ideas and practical planning skills and substantiation of the expediency of carrying out protective measures on the basis phytosanitary information

### GAINING OF COMPETENCES:

*Integral competence.* The ability to solve complex specialized tasks and practical problems of professional activity by specialty and to apply theoretical knowledge and methods in production situations characterized by complexity and uncertainty of conditions.

*General competences (GC)* of a bachelor in plant protection and quarantine - the ability to implement educational and social tasks:

GK 2. Ability to apply knowledge in solving problems in practical cases

GK 3. Knowledge and deep understanding of professional area subject and content

GK 9 Ability to generate ideas (creativity )

*Professional ( major) competences (PC)* of a bachelor in plant protection and quarantine - the ability to perform professional duties by types of professional work:

PC1. Ability to carry out phytosanitary diagnostics of plant diseases, insects, mites, nematodes, rodents and weeds according to the latest principles and methods

PC4. Ability to detect, localize and eliminate regulated pests based on the

results of inspection and phytosanitary examination.

PC7. Ability to coordinate phytosanitary monitoring to detect, identify and determine the peculiarities of the biology and ecology of pests in Ukraine and in accordance with the WTO SPS Agreement and the provisions of the European Union Legislation.

PC8. Ability to comprehensively apply methods for long-term regulation, development and spread of pests to an economically insignificant level based on forecasts, economic thresholds of harmfulness, effectiveness of beneficial organisms, energy-saving and environmental technologies that ensure reliable plant protection and environmental safety in accordance with the WTO SPS Agreement and the provisions of the European Union's legislation.

PC 9. Ability to organize plant protection and quarantine measures by enterprises, institutions, organizations of all forms of ownership and citizens whose activities are related to the use of land, water bodies, cultivation of plants for agricultural and other purposes, sale, processing, storage and use in accordance with WTO agreements, SPS, European requirements.

.PC 11. Ability to establish patterns of spread and development of pests, assess seasonal and long-term dynamics, develop, scientifically substantiate and adapt a set of highly effective measures to control pests, diseases and weeds under various environmental conditions.

*Program learning outcomes:*

PRN 6. Correctly use appropriate methods of observation, description, identification, classification, cultivation of agrobiocenoses and maintenance of their stability to preserve natural diversity

PRN7. Draw up technological maps for the organization of plant protection measures. To have at the operational level the methods of observation, description, identification, classification, cultivation of objects of agrobiocenoses and maintaining their stability in order to preserve natural diversity.

PRN 10. Train, monitor and evaluate the professional skills of employees involved in the implementation of plant protection and quarantine measures

PRN.11. To comply with the requirements of legislation in the field of plant protection and quarantine and promptly respond to changes in legislation

## 2. Programme and structure of the discipline “Agricultural entomology”

Modules and topics	Hrs.						
	Full time students						
	weeks	total	Including				
L			P	l a b	i n d	s t	
<b>Module 1: Pest management of cereal and legume crops</b>		2	3	4	5	6	7
Topic 1. Pests of wheat, rye, barley, oat	1-5	19	4		10		10
Topic 2. Pests of maize, sorghum, rice, buckwheat, millet, grasses	5-7	20	2		3		15
Topic 3. Pests of annual legumes and perennial legume pests	7	13	2		1		5
Total for module 1		52	8		14		20
<b>Module 2: Pests of technical crops</b>							
Topic 4. Pests of sunflowers	8	9	2		2		5
Topic 5. Pests of potato	9	7,5	0,5		2		5
Topic 6. Pests of stored products	10	7,5	0,5		2		5
Topic 7. Pests of flax and hemp	11	8	1		2		5
Topic 8. Diseases of sunflower and ripe	12-13	10	1		4		5
Topic 9. Diseases of hop and tobacco	14	8	1		2		5
Topic 10. Pests of sugar beets	15	13	1		2		10
Total for module 2		63	7		16		40
Total for 1 semester		115	15		33		66

					0	0
<b>Module 3: Pests of vegetables</b>						
Topic 11. Pests of potato	1-2	13	2		6	5
Topic 12. Pests of tomato	3-4	8	2		4	2

Topic 13. Pests of cabbage and other brassicas	4-5	11	2		4	5
Topic 14. Pests of cucurbits	6-7	11	2		4	5
Topic 15. Pests of carrot	7-8	8	1		4	3
Topic 16. Pests of onion and garlic	8-9	8	1		4	3
Total for module 3		59	10		26	23
<b>Module 4: Pests of orchards and small fruits</b>						
Topic 17. Pests of orchards	10-12	13	3		8	2
Topic 18. Pests of small berries and grapes	13-15	21	2		11	8
Total for module 4		34	5		19	10
Research paper		18		-	-	-
Total		240	6		6	12

### 3. Topics of laboratory works

#	Topic	Hrs.
	Module 1	2
1.	Polyphagous Orthopteran pests	2
2.	Polyphagous Lepidoptera pests	2
3.	Polyphagous Coleoptera pests	2
4.	Pests of cereal crops of first vegetation	2
5.	Pests of cereal crops of second vegetation	2
6.	Pests of corn	2
7.	Pests of rice, sorghum and millet	2
	Module 2	
8.	Pests of stored grain and its products ( Coleoptera)	2
9.	Pests of stored grain and its products ( Lepidoptera)	2
10.	Annual legumes' pests	2
11.	Perennial legumes' pests	2
12.	Pests of sunflowers	2
13.	Pests of flax and hemp	2
14.	Pests of tobacco	2
15.	Pests of rape	2
	Module 3	
16.	Potato and other Solanacea crops' pests	2
17.	Tomato pests	2
18.	Pests of vegetables from family Brassica	4
19.	Pests of vegetables from family Curcubitaceae	2
20.	Pests of carrots	2
21.	Onion and garlic diseases	2
22.	Pests of vegetable crops in green house	3
	Module 4	
23.	Orchard pests that damage foliage by piercing-sucking moth parts	2
24.	Orchard pests that damage foliage by chewing moth parts	2
25.	Orchard pest that damage reproductive organs	2
26.	Orchard pests of branches and trunks	2
27.	Raspberry pests	2
28.	Strawberry pests	2

29.	Blueberries and goose berries pests	2
30.	Grape vine pests	2
Total		60

#### 4. Topics for independent study

#	Topic	Hours
1.	PowerPoint presentation “ Interrelation of Agriculture; entomology with other scientific disciplines”	5
2.	PowerPoint presentation “ History of agricultural entomology in Ukraine	5
3.	PowerPoint presentation “Importance of Pest Management in Agriculture”	5
4.	Pest surveillance and Forecasting	5
5.	Integrated pest management concept: legacy of the past and perspective for the future	5
6.	PowerPoint presentation “Categories of Pest “.	5
7.	Model question paper “Weather on Pest Incidence”	5
8.	PowerPoint presentation “Symptoms of Damages and Control Measures of Pest of Major Crops”	5
9.	PowerPoint presentation “Pesticides and their Use in IPM - Mode of Action - Pattern -Plant Protection Equipment and their Use”	5
10.	PowerPoint presentation “ Sericulture and Lac Culture”	5
11.	Model question paper “Examples of a relative method to assess economic threshold levels for an insect pest “	5
12.	Where were the insects collected and where are they grown and reared? Introduction to molecular Biology and scope in Entomological Research,) Central Dogma, Structure of DNA and RNA, Double helix, Genes, DNA and RNA replications, and related terminology	5
13.	Describe which chemicals do insects use to	5



	communicate messages at the following three levels, respectively: within the insect body, intra-specifically (between members of the same species), and inter-specifically (between members of different species)	
14.	PowerPoint presentation” Pest outbreaks tend to occur when” Scope and limitation & bio-intensive and ecological base IPM programmes	5
15.	Cropping systems and climate insect pest management under protected conditions	5

**5. Tools for assessing expected learning outcomes:  
(select necessary or add)**

- exam
- test
- module tests;
- abstracts;
- calculation and graphic works;
- defense of laboratory and practical works;

**6. Teaching methods**

- verbal method (lecture, discussion, interview, etc.)
- practical method (laboratory, practical classes);
- visual method (method of illustrations, method of demonstrations);
- work with educational and methodical literature (note-taking, thesis, annotation, reviewing, writing an abstract);
- video method (remote, multimedia, web-based, etc.);
- independent work (completion of tasks);
- individual research work of higher education students.

**7. Assessment methods**

- exam
- credit;

- oral or written questioning;
- module testing;
- team projects;
- abstracts, essays;
- defense of laboratory and practical work;
- presentations and speeches at scientific events
- work in small groups

## 8. Distribution of points received by students

The assessment of students' knowledge and skills is conducted by means of a 100-point scale and is converted into national grades according to Table 1 of the current *Exam and Credit Regulations at NULES of Ukraine*

Rating from discipline, points	Estimation national	
	exam	credit
90-100	excellent	credited
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not credited

To determine a student's rating in the discipline  $R_{DIS}$  (up to 100 points), the received assessment rating  $R_A$  (up to 30 points) is added to the academic performance rating  $R_{AP}$  (up to 70 points):  $R_{DIS} = R_{AP} + R_A$ .

## 9. Teaching and learning adds

- electronic training course of the discipline (on the educational portal of NULES of Ukraine eLearn – link

<https://elearn.nubip.edu.ua/course/view.php?id=3998> )

- lecture notes and presentations (in electronic form);
- textbooks, manuals, workshops;
- methodological materials for studying the discipline for full-time and part-time students;
- program of educational (industrial) practice of the discipline (if it is provided by the curriculum).

## 10. Recommended literature

### Basic

1. T.R. Stefanovska, S.V. Kucherovska., V.V. Kava. 2016, Agricultural Entomology, Komprint Press, Kiev, 375 p. ISBN 978-966-929-352-7.
2. Лікар Я.О. ,Кава Л.П Сільськогосподарська ентомологія: навч.посіб..К.Компринт, 2020, 480 с.

### Additional

3. Stankevich S.P., Kava L.P., Likar Ya.O., Stefanovska T.R. 2017. Integrated Pest Management. Kiev: Komprint Press, , 270 p. (in ukr.).
4. Kaul, D. S. Objective Guide In Entomology ([edition unavailable]). NEW INDIA PUBLISHING AGENCY (NIPA). 2021. Retrieved from <https://www.perlego.com/book/1975479/objective-guide-in-entomology-pdf> (Original work published 2021)
5. Pedigo, L.P. and Marlin, E. R.. Entomology and Pest Management, 6th Edition, Person Education Inc., Upper Saddle River, New Jersey, 200907458, U.S.A.