

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

**DEPARTMENT OF ENTOMOLOGY, INTEGRATED PLANT PROTECTION  
AND QUARANTINE**

**“APPROVED”**

Faculty of Plant Protection,  
Biotechnology and Ecology  
Minutes # 9 of the Academic Council  
Meeting  
dated “21” May 2026

**CURRICULUM OF ACADEMIC COURSE  
«AGRICULTURAL ENTOMOLOGY»**

**Field of Knowledge:** H Agriculture, Forestry, Fisheries and Veterinary Medicine

**Specialty:** 202 «Plant protection and quarantine»

**Academic Programme:** Plant Protection and Quarantine

**Faculty:** Plant Protection, Biotechnologies, and Ecology

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## 1. Description of the course “Agricultural Entomology

The course "Biological Plant Protection" provides students with theoretical knowledge and practical skills in the application of biological methods for managing pests, plant diseases, and weeds within integrated plant protection systems. The course covers the principles of biological control, ecological interactions among organisms in agroecosystems, and the use of beneficial organisms, including predators, parasitoids, entomopathogenic microorganisms, and nematodes. Students gain knowledge of modern biological plant protection products, mass rearing technologies for biological control agents, and strategies for their effective application in field and greenhouse crops. Special attention is paid to environmentally friendly and sustainable approaches that reduce dependence on chemical pesticides and contribute to biodiversity conservation, food safety, and sustainable agricultural production. The course combines theoretical foundations with practical training in the identification, evaluation, and use of biological control agents.

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 ( including personal w. assignment)	
Form of Control	Examination	
<b>Indicators discipline for full-time and distance learning</b>		
	Full time	Part time ( Correspondence)
Semesters	7-8	-
Lectures	30	-
Practical	-	-
Laboratory	30	-
Independent working assignments	120	-
Personal working assignments	60	-
Number of weekly hours for full-time students	3-4	-
Semester 8	Full time	Distance
Semester	7-8	-
Lectures	30	-
Practical	-	-
Laboratory	30	-
Independent working assignments	60	-
Personal working assignments	-	-
Number of weekly hours for full-time 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 to 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;

List of courses that precede the study of the discipline

- Agrozoology
- General Entomology
- Crop Husbandry
- Herbology

### **Competence**

*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's 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 the 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, and 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. Develop technological maps for organizing 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 Course

Modules and Topics	Weeks	Total Hours	Lectures (L)	Practicals (P)	Laboratory Classes (Lab)	Individual Work (Ind)	Independent Study (I)
<b>Module 1. Pests of Cereal and Legume Crops</b>							
Topic 1. Pests of wheat, rye, barley and oat	1-5	16	4	–	2	–	10
Topic 2. Pests of maize, sorghum, rice, buckwheat and millet	5-7	16	2	–	2	–	12
Topic 3. Pests of annual and perennial legumes	7	14	2	–	2	–	10
<b>Total for Module 1</b>		<b>46</b>	<b>8</b>	<b>–</b>	<b>6</b>	<b>–</b>	<b>32</b>
<b>Module 2. Pests of Industrial Crops</b>							
Topic 4. Pests of sunflower	8	8	1	–	1	–	6
Topic 5. Pests of potato	9	8	1	–	1	–	6
Topic 6. Pests of stored products	10	8	1	–	1	–	6
Topic 7. Pests of flax and hemp	11	8	1	–	1	–	6
Topic 8. Diseases of sunflower and rape	12-13	10	2	–	2	–	6
Topic 9. Diseases of hop and tobacco	14	8	1	–	1	–	6
Topic 10. Pests of sugar beet	15	10	1	–	2	–	7
<b>Total for Module 2</b>		<b>60</b>	<b>8</b>	<b>–</b>	<b>9</b>	<b>–</b>	<b>43</b>
<b>Semester 1 Total</b>		<b>106</b>	<b>16</b>	<b>–</b>	<b>15</b>	<b>–</b>	<b>75</b>
<b>Module 3. Pests of Vegetable Crops</b>							

<b>Modules and Topics</b>	<b>Weeks</b>	<b>Total Hours</b>	<b>Lectures (L)</b>	<b>Practicals (P)</b>	<b>Laboratory Classes (Lab)</b>	<b>Individual Work (Ind)</b>	<b>Independent Study (I)</b>
Topic 11. Pests of potato	1–2	10	2	–	2	–	6
Topic 12. Pests of tomato	3–4	10	2	–	2	–	6
Topic 13. Pests of cabbage and other Brassicaceae crops	4–5	10	2	–	2	–	6
Topic 14. Pests of cucurbits	6–7	10	2	–	2	–	6
Topic 15. Pests of carrot	7–8	8	1	–	1	–	6
Topic 16. Pests of onion and garlic	8–9	8	1	–	1	–	6
<b>Total for Module 3</b>		<b>56</b>	<b>10</b>	<b>–</b>	<b>10</b>	<b>–</b>	<b>36</b>
<b>Module 4. Pests of Orchards and Small Fruit Crops</b>							
Topic 17. Pests of orchards	10–12	9	2	–	2	–	5
Topic 18. Pests of berry crops and grapevine	13–15	9	2	–	3	–	4
<b>Total for Module 4</b>		<b>18</b>	<b>4</b>	<b>–</b>	<b>5</b>	<b>–</b>	<b>9</b>
<b>Total Hours</b>		<b>180</b>	<b>30</b>	<b>–</b>	<b>30</b>	<b>–</b>	<b>120</b>
<b>Research Paper</b>		<b>60</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>60</b>	<b>–</b>
<b>Grand Total</b>		<b>240</b>	<b>30</b>	<b>–</b>	<b>30</b>	<b>60</b>	<b>120</b>

### 3. Topics of Lectures

No.	Topic	Hours
1	Biology and management of pests of wheat, rye, barley and oat	2
2	Biology and management of pests of maize, sorghum, rice, buckwheat and millet	2
3	Biology and management of pests of annual and perennial legumes	2
4	Biology and management of sunflower pests	2
5	Biology and management of potato pests	2
6	Biology and management of stored-product pests	2
7	Biology and management of flax and hemp pests	2
8	Biology and management of diseases of sunflower and rape	2
9	Biology and management of diseases of hop and tobacco	2
10	Biology and management of sugar beet pests	2
11	Biology and management of potato pests in vegetable production systems	2
12	Biology and management of tomato pests	2
13	Biology and management of pests of cabbage and other Brassicaceae crops	2
14	Biology and management of cucurbit pests	2
15	Biology and management of pests of carrot, onion and garlic	2
<b>Total</b>		<b>30</b>

### 4. Topics of Laboratory Classes

No.	Topic	Hours
1	Polyphagous Orthopteran pests	2
2	Polyphagous Lepidopteran pests	2
3	Polyphagous Coleopteran pests	2
4	Pests of cereal crops during the first growing season	2
5	Pests of cereal crops during the second growing season	2
6	Pests of maize	2
7	Pests of rice, sorghum and millet	2
8	Pests of stored grain and grain products	2
9	Annual and perennial legume pests	2
10	Pests of sunflower	2
11	Pests of flax and hemp	2
12	Pests of tobacco and rape	2
13	Pests of potato and other Solanaceae crops	2

<b>No.</b>	<b>Topic</b>	<b>Hours</b>
14	Pests of vegetable crops of the families Brassicaceae and Cucurbitaceae	2
15	Orchard, berry and grape pests	2
<b>Total</b>		<b>30</b>

### **5. Topics for Independent Study**

<b>No.</b>	<b>Topic</b>	<b>Hours</b>
1	Interrelationships between Agricultural Entomology and related scientific disciplines	5
2	History of Agricultural Entomology in Ukraine	5
3	Importance of Pest Management in Agriculture	5
4	Pest Surveillance and Forecasting	5
5	Integrated Pest Management: Past Achievements and Future Perspectives	5
6	Categories of Agricultural Pests	5
7	Weather Effects on Pest Incidence	5
8	Symptoms of Pest Damage and Control Measures for Major Crops	5
9	Pesticides and Their Role in Integrated Pest Management	5
10	Sericulture and Lac Culture	5
11	Economic Threshold Levels in Pest Management	5
12	Molecular Biology and Its Applications in Entomological Research	5
13	Alternatives to Neonicotinoids for Soil Pest Control	5
14	Climate Change and Pest Outbreaks	5
15	Cropping Systems and Pest Management under Protected Cultivation	5
16	Bio-intensive and Ecologically Based IPM Programmes	5
17	Biological Control of Agricultural Pests	5
18	Invasive Insect Species and Their Economic Impact	5
19	Entomopathogenic Microorganisms in Pest Management	5
20	Climate-Smart Pest Management Strategies	5
21	Digital Technologies for Pest Monitoring and Forecasting	5
22	Sustainable Pest Management in Organic Farming Systems	5
23	Integrated Pest Management in Fruit Crops	5
24	Integrated Pest Management in Vegetable Crops	5
<b>Total</b>		<b>120</b>

### **Research Paper**

**Research Paper (Individual Assignment) – 60 hours**

## 6. Methods of assessing expected learning outcomes:

(select necessary or add)

- Exam
- Test intermediate
- Module tests;
- Assay;
- Calculation and graphic works;
- Defense of laboratory and practical works;

### 7. 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
- 

### 8. Results assessment.

The student's knowledge is assessed by means of a 100-point scale converted into the national grades according to the "Exam and Credit Regulations at NULES of Ukraine" in force

#### 8.1. Distribution of points by types of educational activities

Type of Educational Activity	Learning Outcomes	Assessment
<b>Module 1. Pests of Cereal and Legume Crops</b>		
Lecture 1 (if assessed)		–
Laboratory work 1		10
Independent study 1		5
Lecture 2 (if assessed)		–
Laboratory work 2		10
Independent study 2		5
Lecture 3 (if assessed)		–
Laboratory work 3		10
Independent study 3		5
Module control work 1		55
<b>Total for Module 1</b>		<b>100</b>
<b>Module 2. Pests of Industrial Crops</b>		
Lecture 4 (if assessed)		–
Laboratory work 4		10
Independent study 4		5
Lecture 5 (if assessed)		–
Laboratory work 5		10

<b>Type of Educational Activity</b>	<b>Learning Outcomes</b>	<b>Assessment</b>
Independent study 5		5
Lecture 6 (if assessed)		–
Laboratory work 6		10
Independent study 6		5
Lecture 7 (if assessed)		–
Laboratory work 7		10
Independent study 7		5
Module control work 2		40
<b>Total for Module 2</b>		<b>100</b>
<b>Module 3. Pests of Vegetable Crops</b>		
Lecture 8 (if assessed)		–
Laboratory work 8		10
Independent study 8		5
Lecture 9 (if assessed)		–
Laboratory work 9		10
Independent study 9		5
Lecture 10 (if assessed)		–
Laboratory work 10		10
Independent study 10		5
Lecture 11 (if assessed)		–
Laboratory work 11		10
Independent study 11		5
Module control work 3		40
<b>Total for Module 3</b>		<b>100</b>
<b>Module 4. Pests of Orchards and Small Fruit Crops</b>		
Lecture 12 (if assessed)		–
Laboratory work 12		10
Independent study 12		5
Lecture 13 (if assessed)		–
Laboratory work 13		10
Independent study 13		5
Lecture 14 (if assessed)		–
Laboratory work 14		10
Independent study 14		5
Lecture 15 (if assessed)		–
Laboratory work 15		10
Independent study 15		5
Module control work 4		40
<b>Total for Module 4</b>		<b>100</b>
<b>Course Work</b>	(M1 + M2 + M3 + M4) / 4 × 0.7	≤ 70
<b>Examination</b>		30

Type of Educational Activity	Learning Outcomes	Assessment
<b>Total for the Course</b>	(Course Work + Examination)	≤ 100
<b>Research Paper (Course Project)</b>		100

#### Notes:

- Laboratory/practical and self-study scores for Modules 3 and 4 are estimated based on workload proportions from the curriculum structure.
- Module control work for Modules 3 and 4 are scaled to keep total per module = 100 points.
- Lectures are not assessed individually in this table (marked as “-”).
- Final year grade is composed of class work (weighted average of modules 1 and 2) and exam, summing to max 100 points.
- Course project/work is optional and separately evaluated.

### 8.2. Scale for assessing students’ knowledge

Student’s rating, points	National grading (exam/credits)
90-100	excellent
74-89	good
60-73	satisfactory
0-59	unsatisfactory

### 8.3. Assessment policy

<b><i>Deadlines and exam retaking rules</i></b>	Works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g. a sick leave).
<b><i>Academic integrity rules</i></b>	Cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used
<b>Attendance rules</b>	Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean’s consent)

## 9. Teaching and learning add

- 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 parttime students;
- program of educational (industrial) practice of the discipline (if the curriculum provides it).

## **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. ,Кова 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,
6. 6th Edition, Person Education Inc., Upper Saddle River, New Jersey, 200907458, U.S.A.