to Order No. 646 of May 21, 2025

NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

DEPARTMENT OF ENTOMOLOGY, INTEGRATED PLANT PROTECTION AND QUARANTINE

" AUTHORIZED"
Plant Protection,
Biotechnology and Ecology
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CURRICULUM OF ACADEMIC COURSE AGRICULTURAL ENTOMOLOGY

Field of knowledge: Agrarian sciences and food, Specialty 202: H1 Agronomy
Academic programme: Plant protection and quarantine
Faculty Plant protection, biotechnologies, and ecology
Author(s):
Stefanovska T.R.,
candidate of biological sciences, Associate Professor

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Description of the course “Agricultural Entomology

Agricultural Entomology explores the biology, ecology, and practical importance of insects in agroecosystems. The course focuses on economically significant pests, their identification, life cycles, and damage patterns, as well as beneficial insects used in biological control. Students will gain knowledge of integrated pest management (IPM) strategies, insect-plant interactions, and environmentally safe approaches to insect population regulation. Special attention is given to insect taxonomy, monitoring techniques, and modern methods of pest forecasting and control. The course combines theoretical lectures with hands-on identification and fieldwork skills.

Area of expertise, major, educational program, degree		
Level of education	*Bachelor*	
Specialty	202 Plant Protection and Quarantine	
Educational program	Plant Protection and Quarantine	
Characteristics of discipline		
Type od study	Mandatory	
Total hours	240	
Number of credits ECTS	8	
Number of modules	4	
Research paper	18	
Form of control	*exam*	
Indicators discipline for full-time and distance learning		
	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 times students	3-4	-

1.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;
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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 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

1. **Curriculum Structure Agricultural entomology"(Full-Time Students)**

Module and Topics	Weeks	Total Hours	Lectures (L)	Practicals (P)	Independent Study (I)
Module 1: Pest Management of Cereal and Legume Crops					
Topic 1. Pests of wheat, rye, barley, oat	1–5	19	4	–	15
Topic 2. Pests of maize, sorghum, rice, buckwheat, millet	5–7	20	2	3	15
Topic 3. Pests of annual and perennial legumes	7	13	2	1	10
Total for Module 1		52	8	4	40
Module 2: Pests of Industrial Crops					
Topic 4. Pests of sunflower	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 rape	12–13	10	1	4	5
Topic 9. Diseases of hop and tobacco	14	8	1	2	5
Topic 10. Pests of sugar beet	15	13	1	2	10
Total for Module 2		63	7	16	40
Total for Semester 1		115	15	20	80
Module 3: Pests of Vegetable Crops					
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 Brassicaceae crops	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
Module 4: Pests of Orchards and Small Fruits					
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	–	–	18
Total		**240**	**30**	**65**	**138**

3.Topics for lectures

No.	Topics	Hrs
1.	Biology and pest control of wheat, rye, barley, oat pests	2
2.	Biology and pest control of maize, sorghum, rice, buckwheat, millet pests	2
3.	Biology and pest control of annual and perennial legume pests	2
4.	Biology and pest control of sunflower pests	2
5.	Biology and pest control of potato pests (field)	7.5
6.	Biology and pest control of stored product pests	2
7.	Biology and pest control of flax and hemp pests	2
8.	Biology and control of sunflower and rape diseases	2
9.	Biology and control of hop and tobacco diseases	2
10.	Biology and pest control of sugar beet pests	2
11.	Biology and pest control of vegetable potato pests	2
12.	Biology and pest control of tomato pests	2
13.	Biology and pest control of cabbage and other Brassicaceae crop pests	2
14.	Biology and pest control of cucurbit pests	2
15.	Biology and pest control of carrot, onion and garlic pests	2

3.Topics for laboratory work

№	*Topics*	Hrs
	Module 1	1
1.	Polyphagous Orthopteran pests	1
2.	Polyphagous Lepidoptera pests	1
3.	Polyphagous Coleoptera pests	1
4.	Pests of cereal crops in the first vegetation	1
5.	Pests of cereal crops of the second vegetation	1
6.	Pests of corn	1
7.	Pests of rice, sorghum, and millet	1
	Module 2	1
8.	Pests of stored grain and its products (Coleoptera)	1
9.	Pests of stored grain and its products (Lepidoptera)	1
10.	Annual legume pests	1
11.	Perennial legume pests	1
12.	Pests of sunflowers	1
13.	Pests of flax and hemp	1
14.	Pests of tobacco	1
15.	Pests of rape	1
16.	**Module 3**	1
17.	Potato and other Solanaceae crops' pests	1
18.	Tomato pests	1
19.	Pests of vegetables from family Brassica	1
20.	Pests of vegetables from the family Curcubitaceae	1
21.	Pests of carrots	1
22.	Onion and garlic diseases	1
23.	Pests of vegetable crops in the greenhouse	1
	Module 4	
24.	Orchard pests that damage foliage by piercing sucking moth parts	1
25.	Orchard pests that damage foliage by chewing	1
26.	Orchard pest that damages reproductive organs	1
27.	Orchard pests of branches and trunks	1
28.	Raspberry, Blueberry and goose berry pests pests	1
29.	Strawberry pests	1
30.	Grape pests	1
	Total	30

4. Topics for independence work

№.	Topic	**Hrs**
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.	Power Point presentation “ Sericulture and LacCulture”	5
11.	Model question paper ‘Samples of a relative method to assess economic threshold levels for an insect pest “	5
13.	Describe which chemicals may be used to control soil-dwelling pests. Do we have alternatives to neonicotinoids?	5
14	PowerPoint presentation” Pest outbreaks tend to occur when climate change”	5
15.	Review “Cropping systems and insect pest management under protected conditions in response to climate changes”	5
16.	Power-point presentation Scope and limitation & bio-intensive and ecological base IPM programmes	5

6. Methods of assessing expected learning outcomes:

- Exam
- Test intemediate
- 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.
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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

Ось таблиця у форматі, зручному для вставки у Microsoft Word. Вона охоплює всі лабораторні заняття для дисципліни **"Agricultural Entomology"**, з темами, очікуваними результатами навчання та балами оцінювання.

№	Topic	Learning Outcomes	Assessment (Points)
1	Polyphagous Orthopteran pests	Identify and describe major polyphagous Orthopteran pests and their life cycle.	10
2	Polyphagous Lepidoptera pests	Identify key Lepidopteran polyphagous pests and analyze their feeding behavior.	10
3	Polyphagous Coleoptera pests	Recognize major Coleopteran polyphagous pests and their economic impact.	10
4	Pests of cereal crops in the first vegetation	Identify cereal pests in early growth stages and understand monitoring techniques.	10

5	Pests of cereal crops of the second vegetation	Identify cereal pests in late stages and apply forecasting and control methods.	10
6	Pests of corn	Study corn pests, their phenology and damage; evaluate IPM strategies.	10
7	Pests of rice, sorghum, and millet	Identify pests of these crops and analyze control strategies.	10
	Module test 1		30
8	Pests of stored grain and its products (Coleoptera)	Identify Coleopteran storage pests and assess prevention methods.	10
9	Pests of stored grain and its products (Lepidoptera)	Identify Lepidopteran storage pests and understand hygiene strategies.	10
10	Annual legume pests	Know key pests of annual legumes and describe control techniques.	10
11	Perennial legume pests	Describe pests of perennial legumes and their ecological requirements.	10
12	Pests of sunflowers	Identify sunflower pests and evaluate resistance and control strategies.	10
13	Pests of flax and hemp	Study flax and hemp pests and their pest-host interactions.	10
14	Pests of tobacco	Identify major tobacco pests and assess integrated control measures.	10
15	Pests of rape	Recognize rape pests and apply appropriate diagnostic and treatment methods.	10
	Module test 2		30
16	Potato and other Solanaceae crops' pests	Identify Solanaceae pests and explain economic thresholds.	10
17	Tomato pests	Describe tomato pests and propose effective protection measures.	10
18	Pests of vegetables from family Brassica	Identify Brassica pests and describe biological control options.	10
19	Pests of vegetables from the family Cucurbitaceae	Know cucurbit pests and analyze seasonal activity and damage.	10
20	Pests of carrots	Describe carrot pests and evaluate their control strategies.	10
21	Onion and garlic diseases	Recognize onion and garlic pests and diseases; explain crop rotation benefits.	10
22	Pests of vegetable crops in the greenhouse	Study greenhouse pests and evaluate biological control practices.	10
	Module test 3		30
23	Orchard pests: piercing-sucking mouthparts	Identify orchard pests with piercing-sucking mouthparts and their effect on foliage.	10
24	Orchard pests: chewing foliage	Know orchard pests that damage foliage by chewing and analyze feeding behavior.	10
25	Orchard pests: reproductive organ damage	Identify pests that damage flowers and fruits; assess their impact on yield.	10
26	Orchard pests of branches and trunks	Recognize pests damaging branches and trunks and propose management strategies.	10

27	Raspberry, blueberry and gooseberry pests	Identify pests of berry crops and describe control options.	10
28	Strawberry pests	Study strawberry pests and evaluate biological and chemical control measures.	10
29	Grape pests	Identify grapevine pests and assess IPM approaches.	10
	Module test 4		30

8.2. Scale for assessing student's 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

Deadlines and exam retaking rules	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).
Academic integrity rules	Cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used
Attendance rules	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;

T.R. Stefanovska, S.V. Kucherovska., V.V. Kava. 2016, Agricultural Entomology, Komprint Press, Kiev, 375 p. ISBN 978-966-929-352-7.

- methodological materials for studying the discipline for full-time and parttime students;
- program of educational (industrial) practice of the discipline (if it is provided by

the curriculum).

10. Recommended literature

Basic

1. Лікар Я.О. ,Кава Л.П Сільськогосподарська ентомологія: навч.посіб..К.Компринт, 2020, 480 с.
2. 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)

Editional

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.