Додаток 3
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COURCE SYLABUS

«Agricultural entomology»

Educational level – Bachelor
Major 202 Plant Protection and Quarantine
Educational Program «Plant Protection and Quarantine»
Study year 4, semesters 7, 8
Form of study regular
Credits ESTS 7,0
Language of teaching English

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E- learn reference	**Курс: Agricultural Entomology` (nubip.edu.ua)**

COURCE DESCRIPTION

In the system of training for the Plant protection quarantine specialists, the course "Agricultural Entomology" is of the great practical importance. This is 1-year undergraduate course that deals with the study of agriculture and its applications in various domains. This course serves as an mandatory course for undergraduate program is a required course for the Plant Protection and Quarantine Major. The course introduces students to the fundamental concepts of agricultural entomology and pest management including: economic thresholds, sampling techniques, plant resistance to insects, biological control, insecticide use and its consequences and the use of genetically modified plants. The broad course outline is as follows:

- Basics on the status of insect species within the Animal Kingdom and their role in the environment and agriculture in particular, the organization, form and diversity of species of the entomological fauna.
- Basic morphology, anatomy, physiology and systematic classification of insects.
- The symptoms of insect attack induced on crop plants, stored agricultural products, food and / or livestock.
- Management skills for insect pest species and beneficial species in relation to agriculture and the environment in general.
- Laboratory entomology techniques (processing of fresh samples of infested plants [study of symptoms, stereoscopy, microscope], diagnostic procedure)

Competencies of the educational programme

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.

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 measuresTo 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

Cource outline

Тема	**Hours** (lectures/ laboratory/ самостійні)	**Indicators of learning**	**Tasks**	**Evaluation**
7 семестр				
Module 1. Poliphagous pests, pests of cereal and legume crops				
Topic 1. Pests of wheat, rye, barley, oat	6/12/9	To know the species composition of pests, cereals, legumes and		15

Topic 2. Pests of maize, sorghum, rice, buckwheat and millet	2/2/13	legumes. Distribution and harmfulness of pests. Be able to identify an insect based on a set of symptoms and morphological features and the extent of damage. Analyze the influence of environmental factors on the development of the pest and its spread. Apply knowledge of plant protection methods to build integrated pest control systems of various crops.	Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	10
Topic 3. Pests of annual and perineal legumes	2/2/9		Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works. Providing intermediate control by Module test 1	10
Всього за модуль 1				**35**
Module 2. Pests of technical crops				
Topic 4. Pests of sunflowers and its control	4/4/10	To know the species composition of technical crops pest, patterns of their distribution and harmfulness. Be able to identify pests based on a set of morphological signs and symptoms of pest damage. To analyze	Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent	11

		the influence of environmental factors on population dynamics and harmfulness. Apply knowledge of biology and ecology of pests and methods of plant protection to build integrated disease control systems of various crops.	work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	
Topic 5. Pests of flas, hemp and its control	0/2/18		Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	**11**
Topic 6. Pest of sugar beet and its control	2/4/4		Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works. Implementation of intermediate testing on Module 2	13
Totally for Module 2				35
Totally for Semester #7				**70**
Totally for pre-final test				**30**

Totally for the cource				**100**
Semester #8				
Module 3. Pests of vegetable crops				
Topic 1. Pests of potatoes	2/6/1	To know the species composition of vegetable pests, patterns of their distribution and harmfulness. Be able to identify pests based on a set of morphological signs and symptoms of pest damage. To analyze the influence of environmental factors on population dynamics and harmfulness. Apply knowledge of biology and ecology of pests and methods of plant protection to build integrated disease control systems of various crops.	Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	10
Topic 2. Pests of tomatoes and vegetable crops from Brasicacae family The systems of their control measures.	2/4/3		Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	12
Topic 3. Pests of crops belonging to	4/8/3		Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn.	12

			Oral answers to questions for laboratory and independent works. Implementation of intermediate testing on Module 3	
Totally for Module 2				**35**
Module 4. Pests of orchards, berries and grapes				
Topic 4. Foliage pest of orchards with prickly sucking and chewing moth parts and its control	2/6/	To know the species composition of orachrd and berries pests, patterns of their distribution and harmfulness. To be able to identify pests based on a set of morphological signs and symptoms of pest damage. To analyze the influence of environmental factors on population dynamics and harmfulness. Apply knowledge of biology and ecology of pests and methods of plant protection to build integrated disease control systems of various crops.	Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	12
Topic 5. Orchard pest of that damage reproductive plant organs. Pestst of trunks and branches. Control of this pest group	2/5/		Availability of completed laboratory work in the workbook and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works.	12
Topic 6. Pests of berries and orchards and its control	3/16/		Availability of completed laboratory work in the workbook	11

			and sending their electronic file through the Elearn system for verification. Performing independent work and evaluating it in Elearn. Oral answers to questions for laboratory and independent works. Implementation of intermediate testing on Module 2	
Totally for Module 4				**35**
Totally for Semester #8				**70**
Final test				**30**
Totally for the internal course				**100**

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ASSESSMENT POLICY

Deadlines and Rescheduling Policy:	Laboratory works that are submitted late without good reason will be assigned a lower grade. Modules can be rearranged with the permission of the lecturer if there are good reasons (for example, sick leave).
Academic Integrity Policy:	Cheating during tests and exams is prohibited (including using mobile devices). Independent works, essays must have correct text references to the used literature.
Attendance Policy:	Attending classes is mandatory. For objective reasons (for example, illness, international internship), training can take place individually (in online form with the agreement of the dean of the faculty)

SCALE OF ASSESSMENT OF STUDENT KNOWLEDGE

Student Score	**National score base on pre-final and final tests**	
	Final tests	**Pre-final tests**
90-100	Excellent	Passes
74-89	Good	
60-73	Fair	
0-59	Failed	Not passed

RECOMMENDED SOURCES OF INFORMATION

Basic

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

Additional

- Stankevich S.P., Kava L.P., Likar Ya.O., Stefanovska T.R. 2017. Integrated Pest Management. Kiev: Komprint Press. 270 p. (in ukr.).
- Байдик Г. В. та ін.; за ред. Б. М. Литвинова, М. Д. Євтушенка. Сільськогосподарська ентомологія: підручник. Київ: Вища освіта, 2005. 511 с.
- 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 (
- 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.