

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SUMY NATIONAL AGRARIAN UNIVERSITY

Department of Plants Protection named after A.K. Mishnov

**APPROVED by
Head of the Department of
Plant Protection
Named after A.K. Mishnov**

_____ Vlasenko V.A.
" _____ " _____ 2019.

EDUCATIONAL PROGRAM

Course title: Peculiarities of the specific study of phytophages that dominate in the north – eastern part of the forest-steppe region

Specialty: Postgraduate studying 202 "Plant Protection and Quarantine"

Faculty: *Agrotechnology and Environmental Use*

Academic Year 2019 - 2020

The educational program of the subject **“Peculiarities of the specific study of phytophages that dominate in the north – eastern part of the forest-steppe region”** for postgraduate students of the specifically 202 "Plant Protection and Quarantine"

Worked out by: Head of Department of Plant Protection named after A. K. Mishnov, Doctor of agricultural sciences, Professor Vlasenko VA _____

Associate Professor of the Department of Plant Protection named after A.K. Mishnov, PhD in Agricultural sciences _____ V.M.Demenko

The educational program was approved at the meeting of the Department of Plant Protection named after A.K. Mishnov

Minutes May 02, 2019, No. 23

Head of the Department of Plant Protection

named after A.K. Mishnov _____ VA Vlasenko

Approved:

**Dean of the Faculty of Agrotechnology
and Environmental Use _____ I.M. Kovalenko**
where the subject is taught

**Dean of the Faculty of Agrotechnology
and Environmental Use _____ I.M. Kovalenko**
to which department belongs

The specialist of the Educational Department _____ G.O. Baboshina

Registered in the electronic database: Date: _____ 2019

SNAU, 2019

Vlasenko V.A., Demenko V.M. 2019

1. Course description

Name of indicators	Field of study, training program, educational and qualification level	Subject Characteristic	
		Full time	Part time
Number of credits - 4,0	Field of study: <i>20 "Agrarian Sciences and Food Supply "</i>	<i>Non-compulsory</i>	
	Postgraduates Program subject area 202 " Plant Protection and Quarantine"		
Modules - 2		Year of training:	
Content modules: 4		2019 -2020 -	
		Course	
		2	
		Semester	
The total number of hours is 120		3	
		Lectures	
Weekly hours for full-time study: classes - 8 , 0 individual work - 2.9	Educational degree : <i>Graduate Student (Ph.D.)</i>	44 hours	
		Practical work	
		44 hours	
		Individual work	
		32 years	
		Type of control:	
		credit	

Note:

The ratio of hours classes to individual work for full time study is 73.3 / 26.7 (88 / 32)

2. The purpose and objectives of the discipline

Goal: To obtain professional and scientific knowledge, skills and competences for the successful completion of professional and scientific activities within the program species of crops pests for the timely crops protection.

Objective: ability to solve complex problems in a professional, research and innovation activity, providing a deep analysis of existing and new integrated knowledge and training concerning plant protection and quarantine as for morphological and biological characteristics of crop pests, determination the nature and economic edges of damage and methods of protection.

As a result of the training, postgraduates must know:

- the main species of polyphagous and specialized pests on different agricultural crops and perennial crops, as well as their entomophagies, which limit the number of pests, the number of victims and their hosts;
- systematics, biology, harmful stages of multi-feeding and specialized pests, the newest methods of pest control and all measures used to protect crops from pests;
- methods for defining and identification of harmful organisms, entomophages, scientifically grounded phytosanitary diagnostics of insects by mechanisms of control and management of harmful organisms in agrobiocenoses;
- regularities of development and distribution of a harmful organisms complex and to develop scientifically-based protective measures;
- technological schemes of effective control of a complex of harmful organisms on the basis of regular knowledge and skills in the field of entomology;
- long - term studies on the circulation of harmful organisms with the development of the harmful organisms management methodology at species and population levels at agricultural target and non-purpose units;
- forecast models, complex economic threshold for phytophage harmfulness, protective features of useful organisms, energy-saving and environmental technologies for efficient cultivation of promising varieties and hybrids of crops and organic farming running;
- scientifically grounded complex measures in plant protection and quarantine for enterprises, institutions, organizations of all forms of ownership, whose activity is related to the use of land, cultivation of agricultural and other plants, their selling, processing, storage and use;
- norms of academic integrity and scientific ethics.

be able to: identify the main pests on different crops by types of damage to plants, to select a set of measures to reduce the most dangerous species, taking into account the economic thresholds of harmfulness;

- have professional knowledge; formulate ideas and concepts to use in academic or professional work;
- predict changes in the number of insects; analyze the effect of abiotic and biotic factors on insect development; to give correct estimation of population size;
- find solutions while plant protection and quarantine, have sufficient competence in individual research methods, be able to interpret their results;
- apply gained knowledge and skills in solving specialized measures concerning plant protection and quarantine;
- analyze the results of surveys in morphology, biology, ecology, physiology of harmful organisms and evaluate the significance of indicators;
- to participate in professional trainings, discussions on the basis of knowledge on plant protection and quarantine;
- identify, summarize and solve problems that arise in the process of professional activity, and create a sense of responsibility for the work performed;

- to show positive professional, social and emotional behavior and adapt it to the system of universal human values; within the competence to exercise independence and responsibility in work;
- to implement national and world standards on plant protection and quarantine, to combine different technological methods of practical research to solve typical professional problems;
- carry out an individual-educational scientific program, self-study; use innovative scientific creativity;
- to obtain competitive scientific and practical results;
- to provide high-quality scientific survey, processing, analysis and integration of gained scientific knowledge.

3. The educational program of the subject

Content module 1. Polyphagous, Orthoptera, Coleoptera and Lepidoptera

Topic 1. Polyphagous Orthoptera.

The most widespread Acridoidea, Tettigoniidae, Gryllodea in Ukraine are: flying locusts, Italian cockroaches, Moroccan locusts, blue-winged, dark-winged and other subspecies Chorthippus. Characteristics of the main places of their residence. Damaged crops. Features of development cycle and pests behavior. The phenomenon of horde and migration of locusts. Regulation of the number of straight-winged phytophages taking into account the zones of harmfulness and phytosanitary monitoring of agricultural lands.

The lupus, the features of development and protection against it on the farmlands and farms.

Topic 2. Polyphagous Coleoptera

The most common representatives of the Coleoptera family of Elateridae are: sowing, broad-chested, steppe, and others. Damage zones of the Elateridae. Crops that are damaged by them. Degree of Elateridae population density in the non-black soil zone. The role of edaphic factors in the regulation of the number of Elateridae.

The most common and harmful representatives of the Tenebrionidae family in Ukraine are: *opatum sabulosum*, *Pedinus femoralis*, *Blaps halophila*, *Blaps lethifera* and *Oodescelis polita*. Features of their development and harmfulness. Economic threats. Methods and organizational forms of plant protection against Elateridae and Tenebrionidae.

Dangerous pests of the Scarabaeidae family: *Melolontha pectoralis*, *Amphimallon solstitiale*, *Lethrus apterus*.

Features of development and harmfulness. The role of entomophages in the number of *Melolontha*.

Features of chemical protection of crops from the larvae of Elateridae and *Melolontha* and Tenebrionidae, pre-sowing measures, application of chemicals into the soil during sowing of seeds, creation of arable crops, roots cultivation etc.

Topic 3. Scotia

The most common Scotia are: *Agrotis segetum*, *Agrotis exclamacionis*, *Agrotis ipsilon*. Features of their development and harmfulness depending on the cultivation culture, climatic, biological and other factors. The importance of Polyphagous and other species of zoophages in the regulation of the number of Scotia.

Topic 4. Noctuidae

The most common - *Autographa gamma*, *Heliothis virescens*, *Amathes c-nigrum*, *Helicoverpa armigera*, *Spodoptera exigua*; features of their development and spread. Damaged crops. Predators and parasites are regulators of Noctuidae.

Targeted use of agrotechnical measures and chemicals, taking into account the economic thresholds, methods and methods in the regulation of the number of Noctuidae and Scotia.

Topic 5. Polyphagous Pyraustidae

Ostrinia nubilalis and *Margaritita sticticalis*.

Specific features of development, reproduction and harmfulness. Parasites, predators and pathogens as regulators of *Ostrinia nubilalis* and *Margaritita sticticalis* species. The role of edaphic, agro-technical and chemical means in the population regulation of Polyphagous Pyraustidae

Content module 2. Pests of cereals, leguminous crops, sugar beets

Topic 6. Sucking insects.

Dangerous pests of cereals - bread bugs (harmful turtle, Moorish and Austrian bugs, g-headed bugs, wandering and bread flakes), cereals (large, ordinary, barley, cherry-pickles, etc.), rye, oat, etc.)

Theme 7 . Coleoptera pests of cereals

Dangerous pests of cereals in Ukraine - grain beetle, beetle beetles (couscous, crusader, beauties), striped bread flea, red-breasted songbird and blue .

Theme 8 . Winged and gingival pests of cereals.

Characteristics of the main two-winged pests (Swedish flies, Hessian flies, meromizas, winter flies, green-eyed) and cephalopods (bread and black sawdust). Features of their development in different agro-ecological zones. Influence of parasitic zoophages (insects. Nematodes, mites) on the number of bipeds.

Influence of chemical agents, taking into account the economic thresholds of harmfulness, methods, varieties and hybrids on the regulation of the number of insects - phytophages on cereals .

Topic 9. Pests of legumes.

Dangerous sucking pests - pea aphids, the specificity of damage to peas by sucking pests. Specialized hard-wing pests of annual legumes - pea kernels, potato weevils, bean kernels. The main winged pests of peas are: pea fruit and acacia flake . The importance of organizational, economic, agricultural and chemical measures to limit the number of pests.

Pests perennial legumes . Measures to protect perennial legumes from pests .

Topic 10. Solid-winged , existing and perishable sugar beet pests

Characteristics of species composition of hard-winged pests, namely, common beet weevil, gray beet weevil, beet fleas (common, southern, western), beetle thyroid gland, spreading harmful biology.

Dangerous sucking and passing pests of sugar beet: beet leaf aphids, beet root aphids, beet blasting miles, beet blossoming fly, beet bug. Distribution, harmfulness, their biological features.

The role and importance of organizational - economic and agrotechnical measures, predatory and parasitic zoophages, pathogens for the number of insect -

phytophages on sugar beet crops. Effect of pre-sowing seed treatment and use of insecticides on the number of pests.

Content module 3. Pests of industrial and vegetable crops

Theme 11 . potatoes pests

General characteristics of the species of multifamily species and specialized pests. Colorado beetle, the specificity of its biological features. The entom of the Colorado beetle atoms, their role. Suckling pests are carriers of viral diseases of potatoes (large and regular potato aphids). Milk potatoes are a quarantine and dangerous pest in the field and potato fields.

The system of protection of crops (plantings) of potatoes against Colorado potato beetle and multifaceted pests, taking into account the levels of entomophages efficiency and economic thresholds and in the harmfulness.

Theme 1 2 . Pests of sunflower, flax, hemp

Characteristics of specialized pests of sunflower: sunflower fire or moth, sunflower mustache, sunflower rose hips; distribution, harmfulness, biology. The system of protection measures is aimed at regulating their numbers, taking into account the levels of entomophage efficiency and economic thresholds of harmfulness.

Characteristics of specialized pests flax, flax flea beetles (blue, black, brown), l o new moth, le but vy thrips, lonova dovhonizhka; distribution, harmfulness, biology.

A system of measures to protect flax from pests, aimed at regulating their numbers, taking into account the levels of efficiency of entomophages and economic thresholds of harmfulness.

Characteristics of specialized pests: hemp flea and hemp l heath, pest , biology

The system of protection measures is aimed at regulating their numbers, taking into account the levels of entomophage efficiency and economic thresholds of harmfulness.

Theme 1 3 . Pests of cabbage crops

General characteristics of cabbage pests . The role of multi-species and specialized species. General characteristics of species composition of pests of cabbage crops, their biological features. Suck pests: cabbage aphids, cruciferous bugs (rapeseed, motley, mustard); solid wings - cruciferous fleas (pale, wavy, notched, black, blue) stalk cabbage hidden, cabbage listoid, cabbage and rapeseed barides, rapeseed and cabbage barides, mustard leaves, rapeseed flower; scales: cabbage and rapeseed bilani, cabbage scoop, cabbage miles. Cabbage flies (spring and summer), rapeseed.

Use of organizational - agrotechnical measures, predators, parasites, insecticidal plants for regulation of the number of pests of vegetable crops. The need to optimize the use of pesticides, taking into account the economic thresholds of entomophages and the levels of efficacy.

Theme 1 4 . Pests of onion, umbrella, pumpkin crops

General characteristics of species composition of multifamily and specialized pests, peculiarities of their development in different agroclimatic zones.

Pests of onions and garlic: onion fly, onion flurry, onion concealer, onion moth.

Pests of umbrella crops (carrots, dill, parsley, celery, parsnip): carrot fly, umbrella miles, clover miles, carrot leaf, umbrella ash, pale bow butterfly.

Pests of pumpkin, vegetable and melon crops (cucumber, pumpkin, zucchini, squash, watermelon, melon): melon aphid, sprout fly, cucumber mosquito and bedbug (barnacle).

Integrated vegetable and melon crop protection system .

Theme 15 . Pests of vegetables for theft e soils

Pest pests: melon, peach (greenhouse) aphids, greenhouse whitefly, tobacco thrips, cucumber mosquito, grouse (woodpecker) common. Features of their biological development. Role of parasites and predators in pest management. Integrated system of protection of vegetable crops under the conditions of protected r soil.

Content module 4 . Pests of fruit, berry crops, grain and products of its processing

Theme 16 . Pests and leaf pests of fruit crops

Aphids (green apple, plum, pollinated, in cherry), apple and cherry leaves, flakes, features of their development. Integrated system for the protection of fruit crops from sucking pests.

Fruit weevils (kidney gray, bark); scales: apple moths, fruit moths, bilineaceous veins, annular silkworms, mating silkworms, goldenrod, American white butterfly, winter pug, moths (upper, lower, lateral), leaflets (rose, fruit). Integrated system for the protection of fruit crops from leaf pests.

Theme 17 . Pests of generative organs and skeletal branches

Apple, pear, plum fruit, apple and other sawdust, goose, cherry weevil, apple flower eats .

Sklivka apple, a carpenter ant ' yidlyva, fragrant carpenter ant, bark beetles.

Integrated s ystem protective measures , aimed at regulation of pests with the level of efficiency and economic thresholds entomophages hazard.

Theme 18 . Pests raspberries, strawberries, currants and as e Rusu

Raspberry and strawberry pests: raspberry beetle, raspberry - strawberry weevil, shoots raspberry ash, weevil gray, or earthy root, strawberry or strawberry leaf.

Pests and currants and e Rusu: smorodynna sklivka, currant in uzkotila Jewel , a big currant (green) aphids, sawflies (yellow and e Rusovykh, blidonohyy and e Rusovykh, blackcurrant and e Rusova moth, moths and e Rusovykh. Integrated System protection of berry crops from pests .

Integrated system of protection of berry crops against pests, taking into account the need to obtain environmentally friendly products for baby and diet.

Theme 19 . Grape pests

Grapevine pests: grape phylloxera, beekeepers (Turkish, small black, Crimean beetle), grapevine, biennial and grape leaf on eyelashes, grape powdery worm.

Integrated system of protection of grapevines from pests, taking into account the need to obtain environmentally friendly products for baby and diet.

Theme 20 . Pests of grain and products of its processing

Coleoptera pests: collar and rice weevils, flour and small flour cartilage, bread grinder, beetle beetle, Moorish couscous, Suriname flour.

Scale pests: moth and grain moths, firewood (mill, flour, and southern moth) .

Preventive measures and fighter grain pest Mr. and and its products during storage .

Quarantine pests of different crops, perennial plantations are limited widespread and dangerous, especially biology, geographical distribution, quarantine measures .

4. Structure of the subject

Names of content modules and topics	Number of hours							
	Full-time				correspondence form			
	It's all about th	including			Total	including		
		1	pr	Wed		1	pr	Wed
1	2	3	4	5	6	7	8	9
Module 1. Pests of polyhedra, cereals, legumes, sugar beets								
Content module 1 . Polygonal rectangular, hard-winged, winged								
Theme 1. Polygonal rectangular	5	2	2	1				
Theme 2. Polygonal solid wings	5	2	2	1				
Theme 3. Snapping scoops	4	2	1	1				
Theme 4. Leaf-scooping scoops	4	2	1	1				
Theme 5 . Polygonal lights	5	2	2	1				
Together for Content Module 1	23	10	8	5				
Content module 2. Pests of cereals, leguminous crops , sugar beet								
Theme 6 . Sucking pests of cereals .	5	2	2	1				
Theme 7. Coleoptera pests of cereals	6	2	2	2				
8. Subject Diptera and Hymenoptera pests of cereal crops	5	2	2	1				
Topic 9. Pests of legumes	10	4	4	2				
Topic 10. Hard-winged, sucking and sweeping pests of sugar beet	8	2	4	2				
Together with the content of Figure 2	34	12	14	8				
Together for Module 1	57	22	22	thirteen				
Module 2. Pests of industrial, vegetable, fruit, berry crops, grain and products of its processing								
Content module 3. Pests of industrial and vegetable crops								
Topic 11. Potato pests	5	2	2	1				
Topic 12. Pests of sunflower , flax, hemp .	6	2	2	2				

Theme 13 . Pests of cabbage crops.	6	2	2	2				
Theme 14 . Pests of onion, umbrella, pumpkin crops .	6	2	2	2				
Theme 15 . Pests vegetable secure e soils .	6	2	2	2				
Together, in the content of Figure 3	29	10	10	9				
Content module 4 . Pests of fruit , berry crops, grain and products of its processing								
Theme 16 . Pests and leaf pests of fruit crops .	6	2	2	2				
Theme 17 . Pests of generative organs and skeletal branches of fruit crops .	6	2	2	2				
Theme 18 . Pests raspberries, strawberries, currants and as e Rusu .	10	4	4	2				
Theme 19 . Grape pests .	6	2	2	2				
Theme 20 . Pests of grain and products of its processing .	6	2	2	2				
Together, in the content of Figure 4	34	12	12	10				
However, for module 2	63	22	22	19				
At this hour	120	44	44	32				

5. Topics and lesson plan

No s / n	Topic title and outline	Number hours
1	Theme 1. Polygonal rectangular 1. The most common species of locusts, features of their development. 2. Eyelid common, features of development.	2
2	Theme 2. Polygonal solid wings 1. Pieces, measures of protection. 2. Blacker, protection measures. 3. Plate-shaped, protective measures.	2
3	Theme 3 . Snapping scoops 1. Winter scoop, protection measures. 2. Call scoop, protection measures.	2
4	Theme 4 . Leaf-scooping scoops 1. The most common types of leaf scoop. 2. Features of their development, harmfulness. 3. Regulation of the number of leaf-scooping scoops.	2
5	Theme 5. Multi-colored lights 1. Bow butterfly, features of development. 2. Stem butterfly, features of development.	2

	3. Regulation of the number of multifaceted lights.	
6	Theme 6. Suck pests of cereals 1. Sucking pests of cereals from a number of equidae. 2. Sucking pests of cereals from a number of thrips. 3. Suckling pests of cereals from a number of semisolid.	2
7	Theme 7. Coleoptera pests of cereals 1. Dangerous hard- wing pests of cereal grains to ultras . Features of their development and reproduction.	2
8	Theme 8 . Hymenoptera Diptera pests of grain and cereal crops 1. Characteristics of the main bivalve pests . 2. Characteristics of the main vertebrate pests . 3. Measures to protect cereals from pests.	2
9	Theme 9. Pests of annual legumes 1. Pest and annual legumes . 2. From measures of protection of annual legumes from pests .	2
10	Theme 10 . Pests of perennial legumes 1. Pest and perennial legumes . 2 . Measures to protect perennial legumes from pests .	2
1 1	Theme 1 1 . Coleoptera , and minuyuchi sucking pests of sugar beet 1. Characteristics of the species composition of sugar beet pests . 2. With the aid of reducing the number of sugar beet pests .	2
12	Theme 1 2 . Potato pests 1. Specific composition of potato pests and protection measures .	2
1 3	Topic 1 3. Pests of sunflower , flax and hemp 1. Characteristics of specialized pests . System of measures of protection of sunflower from pests. 2. Specific composition of flax pests and protection measures . 3. Specific composition of hemp pests and protection measures ..	2
1 4	Theme 1 4 . W kidneyky cabbage crops 1. Sucking pests. 2. Winged pests. 3. Scale and bivalve pests of cabbage crops. 4. Regulation of the number of insects-phytophages of cabbage crops	2
1 5	Theme 1 5 . Pests of onion, umbrella, pumpkin crops 1. General characteristics of species composition . 2. Integrated security system .	2
1 6	Theme 1 6 . Pests vegetable secure e soils 1. General characteristics of the species composition pests of vegetable crops protected e soils . 2. Integrated security system .	2
17	Theme 1 7 . Pests and leaf pests of fruit crops 1. Species composition and harmfulness of suckling pests . 2. Species composition and harmfulness of leaf pests. .	2
1 8	Theme 18. Pests of generative organs and skeletal branches 1. In the composition and harmfulness of pests of generative organs.	2

19	Theme 19 . Pests of raspberries and strawberries and 1. Raspberry and strawberry pests, protection measures	2
20	Theme 20 . Pests with morodyny and as e Rusu 1. Pests of currant and gooseberry, protection measures.	2
21	Theme 21 . Grape pests in 1. Species composition and harmfulness of grape pests . 2 . Protection measures .	2
22	Theme 2 2 . Pests of grain and products of its processing 1. Coleoptera pests. 2. Scale pests. 3. Comprehensive measures for the protection of grain and other products against collar pests .	2
	Together	44

6. Topics of practical classes

No s / n	The name of the topic	Number g one
1	You are the value of the multifarious pests of a number of rectangles .	2
2	Determination of multidrug pests of a number of Coleoptera .	2
3	Identification of the most common types of bite and leaf scoop .	2
4	Determination of bow and stem butterflies .	2
5	Determination of sucking pests of cereals .	2
6	Definition of hard-wing pests of cereals .	2
7	Determination of bipedal and gingival pests of cereals .	2
8	Identification of pests of annual legumes .	2
9	Determination of pests of perennial legumes .	2
10	Determination of hard-winged sugar beet pests.	2
11	Determination of sucking and passing pests of sugar beet.	2
1 2	Identification of specialized potato pests .	2
1 3	Identification of specialized pests of sunflower and flax.	2
1 4	Determination of cabbage pests .	2
1 5	Determination of pests of onion, umbrella, pumpkin crops .	2
1 6	Identifying pests of vegetable crops protected e soils .	2
1 7	Identifying species th composition of sucking and leaf-eating pests of fruit crops .	2
1 8	Identifying species th composition of pests generative organs and skeletal branches of fruit crops .	2
1 9	Identification of pests of raspberries and strawberries .	2
20	Determination of pests of currant and gooseberry.	2
21	Identification of pests of grapes .	2
2 2	Determination of collar pests .	2
	Total	44

7. Independent work

No s / n	The name of the topic	Number of hours
1	Polygonal rectangular	1
2	Polygonal solid wings	1
3	Snapping scoops	1
4	Leaf-scooping scoops	1
5	Polygonal lights	1
6	Sucking pests of cereals .	1
7	Coleoptera pests of cereals	2
8	Hymenoptera Diptera pests of grain and cereal crops	1
9	Pests of legumes	2
10	Hard-winged, sucking and sweeping pests of sugar beet	2
11	Potato pests	1
12	Pests of sunflower , flax, hemp .	2
thirteen	Pests of cabbage crops.	2
14	Pests of onion, umbrella, pumpkin crops .	2
15	Pests vegetable secure e soils .	2
16	Pests and leaf pests of fruit crops .	2
17	Pests of generative organs and skeletal branches of fruit crops .	2
18	Pests raspberries, strawberries, currants and as e Rusu .	2
19	Grape pests .	2
20	Pests of grain and products of its processing .	2
	Together	32

8. TEACHING METHODS

1. Learning methods for the source of knowledge:

1.1. Verbal: story, explanation, conversation (heuristic and reproductive), lecture,

1.2. Visual: demonstration, illustration, observation.

1.3. Practical: laboratory method.

2. Methods of learning by the nature of the logic of knowledge.

2.1. Analytical.

2.2. Methods of synthesis.

3. Methods of teaching by the nature and level of students' independent mental activity.

3.1. Problem (problem-information).

3.2. Partial search (heuristic).

3.3. Personalized learning;

3.4. Individual training.

4. Active teaching methods - use of technical training tools, use of problem situations, imitation training methods (built on imitation of future professional activity), use of training and control tests), report, presentation,

5. Interactive learning technologies - use of multimedia technologies.

9. CONTROL METHODS

1. Rating control over a 100-point ECTS rating scale
2. Conducting intermediate control during the semester (intermediate certification)
3. Multicriteria evaluation of the current work of third-level university graduates:
 - results of implementation and protection of practical works;
 - express control during class;
 - self-study of the topic as a whole or individual issues;
- writing abstracts;
- test results;
- written tasks in the course of control work;
- evaluation by a group of teachers.

10 . The distribution of points that postgraduates receive

Ongoing testing and independent work																				C R C	To get her for mo dul es an d VT S	Atte stati on	S u m
Module 1 - 35 point s										Module 2 - 35 point s													
Content Module 1 - 17 point s					Course modules 2 - 1 8 mark s					Content module 3 - 17 points					Content module 4 - 1 8 points								
T 1	T 2	T 3	T 4	T 5	T 6	T 7	T 8	T 9	T 10	T 11	T 12	T 13	T 14	T 15	T 16	T 17	T 18	T 19	T 20	1 5	85 (70 + 15)	15	1 0 0
4	4	3	3	3	3	4	3	4	4	3	3	4	4	3	4	3	4	3	4				

Rating scale: national and ECTS

Sum of points for all kinds of educational activity	ECTS grade	Score on a national scale	
		for exam, course project (work), practice	A la standings
90 - 100	AND	perfectly	counted
82 - 89	IN	fine	
75 - 81	WITH		
69 - 74	D		
60 - 68	IS	satisfactorily	not reassigned
35 - 59	FX	unsatisfactory with the	

		possibility of reassembly	
1 - 34	F	unsatisfactory with the compulsory re-study of the discipline	not included in the compulsory re-study of the discipline

11. METHODOICAL SUPPORT

1. Work curriculum of the discipline
2. Information and educational support of all participants of the educational process is provided through the website of Sumy National Agrarian University (<https://snau.edu.ua/>) , which contains information about educational programs, educational, scientific and educational activities, structural units, contacts, repositories, research libraries and reading rooms, and more.

1 2 . Recommended Books

Basic

1. Brigadirenko VV Fundamentals of insect taxonomy: Educ. tool. D .: RVV DNU, 2003. 204 p.
2. Pests of crops and forest plantations / [Antonyuk SI , Areshnikov BA, Baidashnikov AA etc.]; ed. W. P. Vasiliev. K .: Harvest, 1987. 440 p.
3. Hadzalo YM Pests of berry crops in Polissia and in the Forest-Steppe of Ukraine . K.: Harvest, 1999. 80 p.
4. Demenko V. M. , Yemets A. M. Entomology : a tutorial. Sums: SNAU, 2019. 440 p.
5. Handbook of plant protection / [Bublik LI, Vasechko GI, Vasilyev VP, etc.]; in a row. MP Forest. K .: Harvest, 1999. 774 p.
6. Dudnik AV Agricultural entomology: a textbook . Mykolaiv: MSAU, 2011. 389 p.
7. Ermolenko V. M. Atlas com s - pests of field crops . K .: Harvest, 1984. 128 p.
8. Movchan OM Quarantine pests. Part 1. Quarantine pests. K .: World, 2002. 288 p.
9. Science-based system of agriculture of Sumy region. Sums: OJSC "SAD", Kozatsky Val Publishing House, 2004. 662 p.
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