

NATIONAL UNIVERSITY OF LIFE  
AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department Forests Restoration and Meliorations



APPROVED"  
at the meeting of the department  
Forest Restoration and Meliorations  
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"REVIEWED"  
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PROGRAM OF THE COURSE

**Agroforestry**

Area of knowledge 19 «Architecture and construction»  
Specialization 193 – «Geodesy and Land Management»  
Educational program «Geodesy and Land Management»  
Faculty Land Management  
Developers: Professor of the Forests Restoration and Meliorations Department,  
Doctor of Sciences, Professor Vasyl Yukhnovskyi  
(position, academic degree, academic title)  
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(position, academic degree, academic title)

## Description of the course Agroforestry

(title)

Field of knowledge, specialization, educational program, educational degree		
Educational degree	Bachelor	
Specialization	193 – «Geodesy and Land Management»	
Educational program	Geodesy and Land Management	
Characteristics of the course		
Type	Selective	
Total number of hours	120	
Number of ECTS credits	4	
Number of content modules	2	
Course project (work) (if applicable)	-	
Form of assessment	Credit	
Indicators of the course for full-time and part-time forms of study		
	Full-time form of study	Part-time form of study
Course (year of study)	4	
Semester	8	
Lecture classes	15 hr.	6 hr.
Practical, seminar classes	30 hr.	6 hr.
Laboratory classes		
Self-study	75 hr.	108 hr.
Individual assignments		
Number of weekly classroom hours for the full-time form of study	3 hr.	

### 1. Purpose, objectives, and competencies of the course

The **purpose** of studying the course is connected with the need to solve the problems of ecological balance of the land structure, establishing a safe ratio of arable land, natural lands, forest and water resources, the specifics of the scientific justification of agriculture and agroforestry in modern forest-agrarian ecological systems, as well as studying the need the use of forest amelioration plantations as a means of effective protection of agricultural lands from adverse natural phenomena and improvement of the natural environment, formation of the ecological framework of agro-landscapes.

**Objective:** to acquaint students with the scientifically based possibilities of using the ameliorative effect of protective forest plantations on the condition, stability and productivity of agricultural complexes and landscapes, as well as to carry out agroforestry improvement arrangement of territories, aimed at the creation and effective functioning of completed systems of meliorative plantings of various purposes.

As a result of studying the academic discipline, the student should **know**:

- basic concepts about forests, the laws of their life, growth and development;
- types of forest improvement plantations, their purpose and characteristics;

- peculiarities of agroforestry improvement arrangement of protective forest plantations

**be able:**

- use regulatory and reference materials for taxing the forest and various types of forest amelioration plantations in order to assess their condition and fulfill their protective functions;

- solve the issues of forest management and designing systems of forest improvement plantations.

**Competences of the Education Program:**

***Integral competence (IC):***

The ability to solve the problems of agroforestry improvement, the formation of the forest component of agrolandscapes, the evaluation of the agroforestry improvement effect of plantations and their forest management.

***General competences (GC):***

GC01. Ability to learn and master modern knowledge.

GC02. Ability to apply knowledge in practical situations.

GC05. Ability to communicate in a foreign language.

GC06. Ability to use information and communication technologies.

GC07. Ability to work autonomously.

GC08. Ability to work in a team.

GC12. The ability to realize one's rights and responsibilities as a member of society; awareness of the value of a civil (free democratic) society and the need for its sustainable development, the rule of law, the rights and freedoms of a person and a citizen in Ukraine.

GC13. The ability to preserve and multiply moral, cultural, scientific values and achievements of society based on an understanding of history, the patterns of development of the subject area, its place in the general system of knowledge about nature and society, as well as in the development of society, technics and technology, to use various types and forms of moving activities for recreation and leading a healthy lifestyle.

***Special (professional) competences (SC):***

SC02. Ability to apply theories, principles, methods of physical and mathematical, natural, socio-economic, and engineering sciences when performing tasks of geodesy and land management.

SC04. The ability to choose and use effective methods, technologies and equipment for carrying out professional activities in the field of geodesy and land management.

SC06. The ability to perform remote, ground, field and camera surveys, engineering calculations for the processing of research results, form research results, prepare reports when solving geodesy and land management tasks.

SC07. The ability to collect, update, process, critically evaluate, interpret, store, publish and use geospatial data and metadata about objects of natural and man-made origin.

SC08. The ability to carry out professional activities in the field of geodesy and land management, taking into account the requirements of professional and civil safety, labor protection, social, ecological, ethical, economic aspects.

***Program learning outcomes (PLO) of the educational programme:***

PLO2. Organize and manage the professional development of individuals and groups.

PLO3. Convey information, ideas, problems, solutions, own experience and arguments to specialists and non-specialists.

PLO4. Know and apply in professional activity regulatory and legal acts, regulatory and technical documents, reference materials in the field of geodesy and land management and related fields.

PLO5. Apply conceptual knowledge of natural and socio-economic sciences when performing tasks of geodesy and land management.

PLO6. To know the history and peculiarities of the development of geodesy and land management, their place in the general system of knowledge about nature and society.

PLO10. Select and apply the tools, equipment, equipment and software required for remote, terrestrial, field and camera surveys in the field of geodesy and land management.

## 2. Program and structure of the course

Names of content modules and topics	Number of hours												
	Full-time form							Part-time form					
	weeks	total	including					total	including				
			<i>l</i>	<i>p</i>	<i>lab</i>	<i>ind</i>	<i>self</i>		<i>l</i>	<i>p</i>	<i>lab</i>	<i>ind</i>	<i>self</i>
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Content Module 1. Dendrology and silviculture													
Topic 1. General information about the forest	1-2	9	2	2			5	-	-	-	-	-	-
Topic 2. Fundamentals of forestry and afforestation	3-4	16	2	4			10	-	-	-	-	-	-
Topic 3. Forestry-measurement characteristics of stands	5-6	16	2	4			10	-	-	-	-	-	-
Topic 4. Windbreaks	7-8	19	2	4			13	-	-	-	-	-	-
Total for content module 1	60		8	14			40	-	-	-	-	-	-
Content Module № 2. Forest management													
Topic 5. Forest meliorate stands – the element	9-10	20	2	8			10		-	-	-	-	-

of the erosion control system													
Topic 6. Basic of forest inventory	11-14	27	4	8			15		-	-	-	-	-
Topic 7. Agroforestry systems	15	13	1	-			12		-	-	-	-	-
Total for content module 2	<b>60</b>		<b>7</b>	<b>16</b>			<b>35</b>		-	-	-	-	-
Total hours	<b>120</b>		<b>15</b>	<b>30</b>			<b>75</b>		-	-	-	-	-
Course project (work) (if included in the curriculum)			-	-	-		-		-	-	-	-	-
Total hours	<b>120</b>		<b>15</b>	<b>30</b>			<b>75</b>		-	-	-	-	-

### 3. Practical class topics

№	Topic title	Number of hours
1	Forest and its components. Differentiation of trees in a forest.	4
2	Morphological and ecological characteristics of tree and shrub species in agroforestry stands.	4
3	Organizational and economic measures under ordering territory. Elimination of erosion of funds.	4
4	Design of protective forest plantations in terms of land use.	6
5	Selection species, mixing and charting the structures, development of design of agroforestry plantations. Definition of forest cover.	6
6	Determining the amount of wood and forestry-evaluation indicators of forest plantations.	6
	Total	30

### 4. Self-work topics

№	Topic title	Number of hours
1.	The main information about dendrology	20
2.	Background of protective afforestation	20
3.	Agroforestry systems	10
4.	Features of forest management of agroforestry stands	25
	Total	75

### 5. Means of diagnosing learning outcomes:

During the study of the discipline, we use the following means of learning diagnostics: assessment; module tests; calculation and calculation-graphic works; protection of practical works.

## 6. Teaching methods

In the process of studying the discipline, an explanatory and illustrative teaching method is used, with the help of which students gain knowledge in lectures and practical classes, from educational and teaching-methodical literature. This method is widely used when submitting a large array of information.

The method of problem presentation is used in the process of practical classes, when the teacher poses a problem to the presentation of the material, formulates a cognitive task based on various sources and means, and shows the method of solving the task.

## 7. Forms of assessment

During the study of the discipline, the current forms of control are two content modules, and the final form of control is the credit.

## 8. Distribution of grades received by students

Evaluation of student knowledge is carried out on a 100-point scale and is converted to national grades according to Table 1 "Regulations and Examinations and Credits at NULES of Ukraine" (order of implementation dated 03.03.2021, protocol 7)

Student rating, points	National grade based on exam results	
	Exams	Credits
90-100	Excellent	Passed
74-89	Good	
60-73	Satisfactory	
0-59	Unsatisfactory	Not passed

In order to determine the rating of a student (listener) in the discipline  $R_{dis}$  (up to 100 points), the rating from the exam  $R_{ex}$  (up to 30 points) is added to the rating of a student's academic work  $R_{aw}$  (up to 70 points):  $R_{dis} = R_{aw} + R_{ex}$ .

## 9. Educational and methodological support

1. Електронний навчальний курс навчальної дисципліни «Agroforestry» (<https://elearn.nubip.edu.ua/course/view.php?id=2265>).

2. Agroforestry. Working program, methodic advices to the practical classes and self-works for students of Education level «Bachelor» Specialty: 193 - Geodesy and land inventory / V. Yukhnovskyi, O. Sovakov, G. Lobchenko. K. Comprint, 2024. 36 p.

3. Роговський С.В. Агролісомеліорація: практикум: навчальний посібник / С.В. Роговський, І.Д. Василенко, В.М. Черняк, В.М. Хрик, В.Ю. Юхновський // За ред. В.Ю. Юхновського. К. Фітосоціоцентр, 2011. 292 с.

4. Малюга В.М. Агролісомеліорація. Робоча програма, методичні поради для виконання практичних занять і самостійної роботи студентів освітнього

ступеня «Бакалавр» спеціальність 193 – «Геодезія та землеустрій» / Малюга В.М., Дударець С.М., Лобченко Г.О. К. Видавничий центр НУБІП України, 2020.

## **10. Recommended sources of information**

1. Юхновський В.Ю. Агролісомеліорація: підручник / Юхновський В.Ю., Дударець С.М., Малюга В.М., Соваков О.В. К.: РВЦ НУБІП України, 2024. 360 с.
2. Агролісомеліорація: практикум: навчальний посібник / С.В. Роговський, І.Д. Василенко, В.М. Черняк, В.М. Хрик, В.Ю. Юхновський // За ред. В.Ю. Юхновського. К. Фітосоціоцентр, 2011. 292 с.
3. Гірс О.А. Лісовпорядкування: Підручник / Гірс О.А., Новак Б.І., Кашпор С.М. К. Арістей, 2016. 384 с.
4. Довідник з агролісомеліорації (За ред П.С. Пастернака). К. Урожай, 1998. 288 с.
5. Калінін М.І. Теоретичні основи лісових меліорацій / М.І. Калінін, О.С. Мельник. Львів: Світ, 1991. 262 с.
6. Лісові меліорації: практикум – навч. посібник / [В.Ю. Юхновський, С.М. Дударець, В.М. Малюга, О.В. Соваков]; за ред В.Ю. Юхновського. К.: Кондор-видавництво, 2015. – 232 с.
7. Пилипенко О.І. Системи захисту ґрунтів від ерозії: підручник / Пилипенко О.І., Юхновський В.Ю., Дударець С.М., Соваков О.В.]; за ред. О.І. Пилипенко. К. Кондор, 2019. 372 с.
8. Юхновський В.Ю. Лісоаграрні ландшафти рівнинної України: оптимізація, нормативи, екологічні аспекти. К.: Інститут аграрної економіки, 2003. 273 с.
9. Закон України Про меліорацію земель (Документ 1389-XIV, чинний, поточна редакція – Редакція від 01.01.2019, підстава – 2498-VIII). Режим доступу: <https://zakon.rada.gov.ua/laws/show/1389-14#Text>.
10. Про схвалення Концепції розвитку агролісомеліорації в Україні (Розпорядження Кабінету Міністрів України від 18 червня 2014 р. № 582-р. Режим доступу: <https://zakon.rada.gov.ua/laws/show/725-2013-%D1%80#Text>.
11. Правила утримання та збереження полезахисних лісових смуг, розташованих на землях сільськогосподарського призначення (Постанова Кабінету Міністрів України від 22 липня 2020 р. № 650) Режим доступу: <https://zakon.rada.gov.ua/laws/show/650-2020-%D0%BF#Text>.