NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department Forests Restoration and Meliorations

"**APPROVED** "
by the Land Management Faculty
"11" June 2026

CURRICULUM OF ACADEMIC DISCIPLINE

Agroforestry

Area of knowledge 19 "Architecture and construction"
Specialty 193 "Geodesy and Land Management"
Academic program "Geodesy and Land Management"
Faculty Land Management

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Kyiv – 2026

Description of the course Agroforestry

Area of knowledge, specialty, academic programme, academic degree		
Academic degree	Bachelor	
Specialty	193 «Geodesy and Land Management»	
Academic programme	Geodesy and Land Management	
Characteristics of the discipline		
Type	Selective	
Total number of hours	120	
Number of ECTS credits	4	
Number of modules	2	
Course project (work) (if any)	-	
Form of assessment	Credit	
Indicators of the discipline for full-time and part-time forms of university study		
	University study	
	Full-time	**Part-time**
Year of study	4	
Term	8	
Lectures	15 hr.	6 hr.
Practical classes and seminar	30 hr.	6 hr.
Laboratory classes		
Self-study	75 hr.	108 hr.
Individual assignments		
Number of hours per week for full-time students	3 hr.	

1. Aim, competences and expected learning outcomes of the discipline

The **aim** of studying the discipline 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.

List of educational components that precede the study of the academic discipline

The study of "Agroforestry" is preceded by a block of *basic natural sciences* (for understanding physical and biological processes) and *special agronomic, forestry and engineering disciplines* (for understanding land protection technologies).

Main educational components that act as prerequisites:

1. Basic educational components (natural science training):

Soil science and Geology: study of the genesis, mechanical composition, physical and chemical properties of soils.

Botany and Plant Physiology: knowledge of the species composition of trees, shrubs, their root system and reactions to stress conditions.

Ecology and nature conservation: understanding the interaction of vegetation with the environment, the influence of forest belts on the microclimate.

2. Special educational components (professional training):

Forestry (or General Forestry): basic principles of creating forest plantations, types of forests and their care.

Agriculture and Plant Production: study of the principles of crop rotation, soil cultivation technologies and growing crops protected by plantations. [1]

Hydrology and Land Reclamation: knowledge of the water balance of territories, runoff regulation and principles of drainage and irrigation measures.

Geodesy and Cartography: ability to read topographic maps, navigate the terrain, measure areas and elevation differences (necessary for designing field shelterbelts and terraces).

Agricultural Phytopathology and Entomology: knowledge of pests and diseases that are taken into account when creating protective forest plantations

Competences acquired:

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.

Expected learning outcomes (ELO):

ELO2. Organize and manage the professional development of individuals and groups.

ELO3. Convey information, ideas, problems, solutions, own experience and arguments to specialists and non-specialists.

ELO4. 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.

ELO5. Apply conceptual knowledge of natural and socio-economic sciences when performing tasks of geodesy and land management.

ELO6. 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.

ELO10. 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 discipline

Mmodules and topics	Number of hours													
	Full-time							Part-time						
	weeks	total	including					total	including					
			l	*p*	*lab*	*ind*	*s.st.*		*l*	*p*	*lab*	*ind*	*s.st.*	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Module 1. **Dendrology and silviculture**														Module 1. Dendrology and silviculture
Topic 1. General information about the forest	1-2	9	2	2			40	-	-	-	-	-	-	
Topic 2. Fundamentals of forestry and afforestation	3-4	16	2	4				-	-	-	-	-	-	
Topic 3. Forestry-measurement characteristics of stands	5-6	16	2	4				-	-	-	-	-	-	
Topic 4. Windbreaks	7-8	19	2	4				-	-	-	-	-	-	

Total for content module 1	**60**		**8**	**14**			**40**	-	-	-	-	-	-
Module 2. **Forest management**													
Topic 5. Forest meliorate stands – the element of the erosion control system	9-10	20	2	8			35		-	-	-	-	-
Topic 6. Basic of forest inventory	11-14	27	4	8					-	-	-	-	-
Topic 7. Agroforestry systems	15	13	1	-					-	-	-	-	-
Total for content module 2		**60**	**7**	**16**			**35**		-	-	-	-	-
Total hours		**120**	**15**	**30**			**75**		-	-	-	-	-
Course project (work) (if included in the curriculum)			-	-	-		-		-	-	-	-	-
Total hours		**120**	**15**	**30**			**75**		-	-	-	-	-

3. Topics of lectures

No.	Topic	Hours
1	General information about the forest	2
2	Fundamentals of forestry and afforestation	2
3	Forestry-measurement	2
4	Windbreaks	2
5	Forest meliorate stands – the element of the erosion control system	2
6	Basic of forest inventory	2
7	Agroforestry systems	1

4. Topics of practical classes

No.	Topic	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

5. Topics of self-study

No.	Topic	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

6. Methods of assessing expected learning outcomes: *(select necessary or add)*

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.

7. Teaching methods

Teaching methods *(select necessary or add):*

- problem-based method;
- practice oriented studying method;
- case method;
- project education method;
- flipped classroom, mixed education method;
- learning discussions and debates method;
- team work, brainstorm method
- gamification studying method.

During the study of the discipline, we use the following means of learning diagnostics: problem-based method; practice oriented studying method; case method; research based method.

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

Educational activity	Results	Assessment
Module 1. **Dendrology and silviculture**		
Practical work 1.	Forest and its components. Differentiation of trees in a forest.	**10**
Practical work 2.	Morphological and ecological characteristics of tree and shrub species in agroforestry stands.	**10**
Practical work 3.	Organizational and economic measures under ordering territory. Elimination of erosion of funds.	**10**
Self-study 1.	The main information about dendrology	**5**

Self-study 2.	Background of protective afforestation	**5**
Module control work 1.	Module test	**60**
Total for module 1		**100**
Module 2. **Forest management**		
Practical work 4.	Design of protective forest plantations in terms of land use.	**10**
Practical work 5.	Selection species, mixing and charting the structures, development of design of agroforestry plantations. Definition of forest cover.	**10**
Practical work 6.	Determining the amount of wood and forestry-evaluation indicators of forest plantations.	**10**
Self-study 3.	Agroforestry systems	**5**
Self-study 4.	Features of forest management of agroforestry stands	**5**
Module control work 2.	Module test	**60**
Total for module 2		**100**
Class work		**70**
Exam/credit		**30**
Total for year		**100**

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	*EXAMPLE:* 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	*EXAMPLE:* 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	*EXAMPLE:* Attendance is compulsory. For good reasons (e.g. illness, international internship), training can take place individually (online by the faculty dean's consent)

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. 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.

6. 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.

7. Юхновський В.Ю. Лісоаграрні ландшафти рівнинної України: оптимізація, нормативи, екологічні аспекти. К.: Інститут аграрної економіки, 2003. 273 с.

8. 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.

9. Про схвалення Концепції розвитку агролісомеліорації в Україні (Розпорядження Кабінету Міністрів України0 від 18 червня 2014 р. № 582-р. Режим доступу: https://zakon.rada.gov.ua/laws/show/725-2013-%D1%80#Text.

10. 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.