

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCE OF
UKRAINE**

Department of Botany, Dendrology and Forest Tree Breeding

“APPROVED”

Dean of the Faculty of Plant Protection,
biotechnology and ecology
Yulia KOLOMIETS



28 05 2024

“APPROVED”

at the meeting of Botany, Dendrology
and Forest Tree Breeding Department
Minutes № 14 of 27 05 2024

Head of Department
Yurii MARCHUK

“REVIEWED”

Guarantor of the AP "101 Ecology"
Volodymyr BOHOLUBOV

**CURRICULUM OF EDUCATIONAL PRACTICE PROGRAMM
BIOLOGY I (BOTANY)**

Field of knowledge: 10. Natural sciences

Specialty: 101 Ecology

Academic programme: Ecology

Education and Research Institute of Forestry and Landscape-Park Management

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Breeding Andrii CHURILOV

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Introduction

Aims: to consolidate the knowledge acquired by students during practical classes and the theoretical course, to acquaint students with the richness of the vegetation cover of Ukraine, with various plant formations, their species composition and features.

Purposes:

- to learn how to collect and organize biological collections - a systematic herbarium of indicator plants of various forest vegetation conditions;
- to acquire knowledge about the flora of natural zones of Ukraine;
- master the methods of recording and identifying the species diversity of seed and higher spore plants;
- to work out the methodology of inventorying the vegetation cover of the territories, by performing geobotanical descriptions and researching plant populations.

Acquisition of competences:

Integral competence (IC): The ability to solve complex specialized problems and solve practical problems in the field of ecology, environmental protection and balanced nature management, which involves the application of basic theories and methods of environmental sciences, which are characterized by the complexity and uncertainty of conditions.

General competencies (GC):

- **GC1** Knowledge and understanding of the subject area and professional activity.
- **GC8** Ability to conduct research at an appropriate level.

Special (professional) competences (SC):

- **SC2.** Ability to critically understand basic theories, methods and principles of natural sciences.
- **SC8.** Ability to justify the need and develop measures aimed at preserving landscape biological diversity and forming ecological network.

Expected Learning Outcomes (ELO):

- **PRO2.** Understand basic environmental laws, regulations and principles of environmental protection and balanced nature management.
- **PRO17.** To be aware of the responsibility for the effectiveness and consequences of the implementation of complex environmental protection measures.

Localities for practice: the territory of the university campus and plantings within the Botanical Garden of the National University of Bioresources and Nature Management of Ukraine, the territory of the National Nature Park "Holosiivskyi" within the tract "Holosiivskyi Forest", forest massifs of the SD of NUBiP of Ukraine "Boyarka Forest Research Station".

Organization

Educational practice at the department begins with a safety briefing with a corresponding entry in a safety journal. Every day, during botanical excursions in natural conditions, students study: different types of growth sites, the most important indicators of these types and their adaptability to environmental conditions, and their indicative and national economic significance; rare and endangered species of local flora and measures for their protection.

To go on excursions, students must have certain equipment: for the brigade - a herbarium folder with a set of newspapers, writing instruments, a magnifying glass, a tape measure or a cord, a height meter, a measuring rod and a fork, sample plot description forms, notebooks for notes, plastic bags, paper for labeling plants, a digger, a camera, a GPS receiver.

During the processing of the collected material in the laboratory, students have the following tasks: to consolidate the method of morphological analysis of plants, the characteristics of families, to be able to use the identifier and to identify the collected plants.

Content of practice

Educational practice from the course "Botany" is the final stage in the study of the theoretical course, it aims to consolidate the knowledge obtained during laboratory-practical classes and lectures. It is conducted in the spring and summer periods by the laboratory-excursion method by teams of 6 students.

Duration of educational practice is 5 days (25 hours). The educational practice provides for 3 days of field work (observational botanical excursions to forest areas in the vicinity of Kyiv, collection of plants from various types of phytocenoses for the herbarium, planting plants for drying, field geobotanical descriptions), 2 days of chamber work (identification of plants, design of the herbarium, forms of geobotanical descriptions of vegetation).

Table 1

Approximate plan

Topic title	Hours		
	Total	include:	
		classes	self-study
Topic 1. Plants and the environment, the study of the floral diversity of plant formations	1	1	-
Topic 2. Familiarity with the structure of forest phytocenosis, methods of geobotanical studies of forest vegetation	1	-	1

Topic 3. Sampling and design of a forest typological herbarium, including with the use of photographic materials	1	-	1
Topic 4. Sampling and design of a forest typological herbarium, including with the use of photographic materials	1	-	1
Topic 5. Protection, preservation and enrichment of plant resources, rare plants and groups of Ukraine	1	1	-
Total	5	2	3

Tasks for self-study

Work performed by students during summer training is divided into field and chamber work. Field work includes: collection of herbarium, inventory of individual plots of plantations on the territory of NUBiP of Ukraine. Chamber works include: definition and design of the herbarium, compilation of a list of indicator plants of various conditions, protection and delivery of the herbarium.

Manuals

1. Якубенко Б.Є. (2015) Польовий практикум з ботаніки. Навчальний посібник. Київ: Фітосоціоцентр. 400 с.
2. Чурілов А.М., Якубенко Б.Є. (2015) Ботаніка. Методичний посібник щодо користування лісотипологічним гербарієм. Київ: Видавничий центр НУБіП України. 176 с.
3. Чурілов А.М. (2019) Особливості вивчення рослинного покриву лісів. Методичні рекомендації до польової практики для студентів спеціальності 205 «Лісове господарство». Київ. 205 с.

Approximate topics for outdoor education (field studies)

Topic title	Locality	Number of hours
Topic 1. Plants and the environment, the study of the floral diversity of plant formations	NPP "Holosiiivskiy" Botanical garden of NUBiP of Ukraine	4
Topic 2. Familiarity with the structure of forest phytocenosis, methods of geobotanical studies of forest vegetation	NPP "Holosiiivskiy" Botanical garden of NUBiP of Ukraine	4
Topic 3. Sampling and design of a forest typological herbarium,	Botanical garden of NUBiP of Ukraine SD of NUBiP of Ukraine "Boyarska	4

including with the use of photographic materials	RFS"	
Topic 4. Sampling and design of a forest typological herbarium, including with the use of photographic materials	Botanical garden of NUBiP of Ukraine SD of NUBiP of Ukraine "Boyarska RFS"	4
Topic 5. Protection, preservation and enrichment of plant resources, rare plants and groups of Ukraine	NPP "Holosiiivskyi" SD of NUBiP of Ukraine "Boyarska RFS"	4

Tools and educational supporting

Secateurs, measuring forks, herbarium folders, herbarium presses, rangefinders, cameras.

Requirements for report

The following are the reporting materials for the assessment of educational practice:

1. Practice diary, where every day of work is recorded: the topic of the excursion, the collected plants, their biological and ecological characteristics.
2. Forms of geobotanical descriptions with the results of conducted research, in the amount of 2 pcs. for alder and hornbeam-oak forest communities.
3. List of plants of the collected systematic herbarium of herbaceous plants.
4. Collected and accordingly designed on A3 paper with appropriate labels for each sample of herbarium plants in the amount of 120 species.
5. Knowledge of Ukrainian and Latin names of plant species and families to which they belong, as well as their economic and indicative significance.

Tools for assessing

Credit.

Recommended sources of information

1. iNaturalist – електронна відкрита база даних по біорізноманіттю <https://www.inaturalist.org>
2. Національна мережа інформації з біорізноманіття Ukrbin <http://ukrbin.com>
3. The Plant List (англомовний ресурс, присвячений сучасній систематиці і таксономії вищих рослин). Доступ за адресою: <http://www.theplantlist.org/>
4. Plants of the World online (англомовний ресурс, присвячений сучасній систематиці і таксономії вищих рослин, наявні ілюстрації рослин). Доступ за адресою: <http://powo.science.kew.org/>
5. Український геоботанічний сайт <http://geobot.org.ua/>
6. The International Association for Vegetation Science (IAVS) <http://iavs.org/>