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

DEPARTMENT OF BOTANY, DENDROLOGY AND FOREST TREE BREEDING



“CONFIRMED”

Dean of the Faculty of Plant Protection,
biotechnology and ecology
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“APPROVED”

at a meeting of the Department of of Botany,
Dendrology and Forest Tree Breeding
Protocol № 11 from “15” 05 2023
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”REVIEWED”

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WORKING PROGRAM OF EDUCATIONAL PRACTICE

Biology I (botany)

Specialty 101 Ecology

Educational program Ecology

Education and Research Institute of Forestry and Landscape-Park Management

Developers: Associate professor of the Department of Botany, Dendrology and Forest Tree Breeding

Andrii M. Churilov

Kyiv – 2023

1. Description of educational practice "Biology I (botany)"

Field of knowledge, specialty, educational degree				
Educational degree	Bachelor			
Specialty	101 Ecology			
Educational program	Ecology			
Characteristics of the educational practice				
Type	<i>Required</i>			
Total number of hours	30			
Number of ECTS credits	–			
Number of modules	–			
Course project (work) (if available)	–			
Form of control	<i>Test</i>			
Indicators of educational practice for full-time and part-time forms of education				
	full-time form of education		part-time form of education	
Year of preparation	1		1	
Semester		2	1	2
Lectures				
Practical, seminar classes				
Laboratory classes				
Individual work				
Educational practice		30		
Number of weekly hours for full-time study: classroom - independent student work -				

2. Purpose, tasks and competencies of the educational practice

The purpose of the educational practice in the discipline "Biology I (Botany)" is the acquisition by students of the 1st year of the necessary professional skills and the practical consolidation of the knowledge acquired during the course. During the internship period, students are expected to be introduced to traditional, classic and modern methods of vegetation research, which contributes to the training of qualified specialists in ecology and environmental protection who meet the requirements of the State Standard of Higher Education.

The purposes of educational practice are:

- to consolidate the knowledge that students gained during practical classes and the theoretical course, to acquaint students with the richness of the vegetation cover of Ukraine, with different types of vegetation, their species composition and features;
- acquisition of the necessary skills to work in the field;
- mastering general methods of research in geobotany, consolidating and deepening the theoretical knowledge obtained during the course "Biology I (botany)";
- acquiring experience and skills of independent work. Practice tasks include:
- acquisition of skills in selection and preparation of plant samples;
- data collection and analysis, assessment of phytodiversity of a specific territory;

- acquisition of field record keeping skills and preparation of field research results;
- to know the main rules how to work with reference, scientific and educational literature.

Acquisition of competencies:

general competencies (GC):

- **GC4.** Ability to written and oral communication in the Ukrainian language (professional direction).
- **GC8.** Ability to conduct research at an appropriate level.

professional (special) competencies (PC):

- **PC3.** Ability to understand the main theoretical provisions, concepts and principles of mathematical and socio-economic sciences.
- **PC5.** Ability to assess the impact of technogenesis processes on the environment and identify environmental and radiation risks associated with production activities.
- **PC7.** Ability to conduct environmental monitoring and assess the current state of the environment.
- **PC9.** Ability to participate in the development of a management system and handling of production and consumption waste, including radioactive.

Program learning outcomes (PLO):

- **PLO4.** Apply the principles of management on which the system of environmental, biological and radiation safety is based.
- **PLO8.** Be able to search for information using relevant sources to make informed decisions.
- **PLO15.** Be able to explain the social, economic and political consequences of implementing environmental projects.
- **PLO17.** To be aware of the responsibility for the effectiveness and consequences of the implementation of complex environmental protection measures.
- **PLO19.** To raise the professional level through continuing education and self-education.
- **PLO21.** Be able to choose optimal methods and tools for research, data collection and processing.

3. Organization of practice

Work performed by students during summer training is divided into field and chamber work. The field work includes: selection of specimens for the herbarium, collection of photo materials on phytodiversity, inventory of individual plots of plantations on the territory of the National Institute of Natural Sciences of Ukraine. Chamber works include: definition and design of the herbarium, compilation of a list of plants-indicators of ecological conditions, protection and delivery of the herbarium.

Practice begins with familiarizing students with the purpose, main tasks, form of conduct, work schedule, rules for keeping field diaries and recording the results of field work. Students are instructed in safety techniques while working in the field, fire safety. Work according to the general program involves getting to know the phytodiversity of biotopes within the campus and the botanical garden of the NUBiP of Ukraine, in the adjacent territories of the Park named after M. Rylskyi, the central part of the "Holosiivskyi" NPP. Educational practice begins with botanical excursions, during which students study: different types of growth sites, the most important indicators of these types and their adaptability to environmental conditions and indicative and practical 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 utensils, a magnifying glass, a tape measure, forms for the description of test plots, notebooks for notes, plastic bags, paper for labeling plants, a digger, a camera, a GPS receiver .

An individual plan involves the work of a group of students (2-3 people) on a specific task given by the teacher in accordance with the goals and objectives of the practice.

Teams of students work independently, consulting with the teacher. The practical tasks of individual work include mastering the methods of performing geobotanical descriptions and collecting material related to phytodiversity, analyzing the received data and designing the research results, working with special literature. 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.

The basis of educational practice is the Department of Botany, Dendrology and Forest Breeding.

4. Program and structure of educational practice:

Duration of practice	Content	Number of hours
1	Plants and the environment, a study of the floristic diversity of broad-leaved forests. Peculiarities of the description of the vegetation of hornbeam-oak forests spread over the "Holosiivsky forest" tract. Anthropogenic influence on groups of broad-leaved forests and its characteristics.	6
2	Acquaintance with the structure of artificial phytocenoses of lawns and meadow and coastal water plant communities, methods and features of their geobotanical studies. Processing of results.	6
3	Methods of sampling plant material: features of selection and identification of bryophytes, lichens, and vascular plants. Their preparation and further storage.	6
4	Protection, preservation and enrichment of plant resources, rare plants and groups of Ukraine. Identification of rare and synanthropic species. Work with literary sources and open databases. Peculiarities of identification and assessment of phytodiversity of territories, including the nature reserve fund of Ukraine	6
5	Processing of data obtained in the field. Peculiarities of sorting and storing biodiversity data. Drawing up reports on practice and handing in the credit	6
Total:		30

5. Duties of students and tutors

During the internship, students are obliged to:

- observe the safety rules in accordance with the current instructions and generally accepted norms of behavior during educational practice;
- conscientiously perform the tasks provided for in the practice program.

Practice tutors are obliged to:

- to acquaint students with the terms of practice, the form of reporting and other organizational provisions;
- properly organize students' work;
- monitor discipline and practice;
- conduct consultations on the methodology of performing individual tasks and registration of the obtained results;
- analyze the results of practice and prepare appropriate recommendations.

6. Teaching methods

Research method. After analyzing the material, setting problems and tasks, and brief oral or written instruction, the trainees independently study the literature, sources, conduct observations and

measurements, and perform other research activities. Initiative, independence, creative search are most fully manifested in research activities. The methods of educational work directly turn into methods that imitate and sometimes implement scientific research.

7. Report of students on practice

During practice, students are required to keep field diaries where the content and results of the work are recorded every day. In addition, they fill in the forms of descriptions of plant groups and collect samples for herbarization. At the end of the internship, a written report is drawn up on all types of work. The student's report and practice diary are submitted to the department.

The students report the results of the internship to the teachers who conducted the internship, demonstrating the knowledge and skills they gained during the internship.

Based on the results of the students' reports and taking into account the characteristics of the practice leader, the student is given an appropriate grade.

8. Distribution of points received by students

Assessment of student knowledge is on a 100-point scale and is translated into national assessments according to table. 1 "Regulations on examinations and tests in NULES of Ukraine"

Student rating, points	Grade according to national system	
	exams	final tests
90-100	Excellent	Credited
74-89	Good	
60-73	Satisfactory	
0-59	Unsatisfactory	Not Credited

To determine the student's rating for mastering the discipline RDIS (up to 100 points), the obtained rating for certification (up to 30 points) is added to the rating of the student (listener) for academic work RNR (up to 70 points): $R_{DIS} = R_{HP} + R_{AT}$.

9. Educational and methodological support

Educational and methodological support of the educational process includes: state standards of education, curricula, educational programs from all normative and selective educational disciplines; programs of educational, industrial and other types of practices; textbooks and training aids; instructional and methodical materials for seminar, practical and laboratory classes; individual educational and research tasks; control works; text and electronic versions of tests for current and final control, methodical materials for organizing students' independent work.

10. Recommended sources of information

Basic literature

Бережняк М.Ф., Якубенко Б.Є., Тонха О.Л., Чурілов А.М., Сендзюк Р.В., Бережняк Є.М. (2021).

Ґрунтознавство з основами геоботаніки. Підручник. К.: Ліра-К, 632 с.

Якубенко Б.Є., Попович С.Ю., Григорюк І.П., Мельничук М.Д. (2013). Геоботаніка: тлумачний словник. Навчальний посібник. Київ: Фітосоціоцентр, 420 с.

Якубенко Б.Є. (2015). Польовий практикум з ботаніки. Навчальний посібник. Київ: Фітосоціоцентр. 400 с.

Чурілов А.М., Якубенко Б.Є. (2015). Ботаніка. Методичний посібник щодо користування лісотипологічним гербарієм. Київ: Видавничий центр НУБіП України. 176 с.

Чурілов А.М. (2022). Особливості вивчення рослинного покриву лісів. Київ: Експодрук. 160 с.

Supporting literature

- Войтюк Ю.О., Кучерява Л.Ф., Баданіна В.А., Брайон О.В. (1998). Морфологія рослин з основами анатомії та цитоембріології. Київ: Фітосоціоцентр. 216 с.
- Нечитайло В.А., Кучерява Л.Ф. (2000). Ботаніка. Вищі рослини. Київ: Фітосоціоцентр. 432 с.
- Основи роботи в середовищі програм Turboveg та JUICE (2015). Укладачі: Куземко А.А., Буджак В.В., Чорней І.І., Токарюк А.І. Чернівці: Чернівецький національний університет. 64 с.

Information resources

- Course of discipline "Biology I (botany): URL: <https://elearn.nubip.edu.ua/course/view.php?id=1164>
- iNaturalist. URL: <https://www.inaturalist.org>
- National network of information on biodiversity Ukrbin. URL: <http://ukrbin.com>
- Global Biodiversity Information Facility (GBIF). URL: <https://www.gbif.org>
- Plants of the World online. URL: <http://powo.science.kew.org/>
- The Catalogue of Life. URL: <https://www.catalogueoflife.org/>
- Ukrainian geobotanical site. URL: <http://geobot.org.ua/>