

SYLLABUS OF THE EDUCATIONAL COMPONENT

Industrial pharmaceutical practice in pharmacognosy

for higher education students of the 5th year of full-time education (2023/2024)
(4.10д) years of age for foreign citizens studying English)
educational program «Pharmacy»
specialty «226 Pharmacy, industrial pharmacy»
field of knowledge «22 Healthcare»
the second (master's) level of higher education

TEACHERS



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1. Name of higher education institution and unit: National University of Pharmacy, Department of Pharmacognosy and Nutriciology.

2. Address of the department: street Valentinovskaya, 4, Kharkiv, 61168

3. Web-site of the department: <https://cnc.nuph.edu.ua/>

4. Information about teachers:

KYSLYCHENKO Viktoriia Sergiivna.

Doctor of Pharmaceutical Sciences, professor, head of the Department of Pharmacognosy and Nutrition of the National University of Pharmacy, Honored Professor of the National University of Science and Technology, Honored Worker of Science and Technology of Ukraine, academician of the PO "National Academy of Sciences of Higher Education of Ukraine". Experience of scientific and pedagogical activity - 41 years. Reads courses: "Pharmacognosy with the basics of resource science", "Pharmacognosy with the basics of biochemistry of medicinal plants", "Industrial practice in pharmacognosy". The main directions of scientific research: the study of medicinal and agricultural plants, the synthesis of analogs of natural flavonoids, cardenolides, coumarins and the creation of medicinal products of various biological effects based on them; search for new sources of medicinal, agricultural and fruit and berry plants, vegetable raw materials and raw materials of animal origin to obtain complexes of biologically active compounds; separation of compounds in an individual state using physical, physico-chemical and chemical methods, establishing their structure; chemical synthesis and chemical modification of the studied compounds, including full synthesis, synthesis of analogues and derivatives for the purpose of confirming the structure, establishing the relationship between the structure and their biological action; standardization of promising types of plant and animal raw materials, substances and phytopreparations obtained from them; development of quality control methods (QCM) for medicinal plant and animal raw materials and phytopreparations; scientific and technical examination of technological regulations for the industrial production of preparations of plant and animal origin; implementation of promising scientific developments in industrial production.

5. Consultations: take place online according to the schedule posted on the website of the Department of Pharmacognosy and Nutriciology.

6. Abstract of the educational component: Industrial practice in pharmacognosy occupies an important place in the system of training future pharmacists. It is held at the graduation course to consolidate knowledge of pharmacognosy: acquisition of skills in procurement, storage and processing of medicinal plant raw materials (MPM).

7. The purpose of teaching the educational component: to teach students of higher education to identify MP and morphologically close species, to prepare MP, to carry out primary processing, drying, commodity analysis of MP, which is necessary in the practical activity of a pharmacist; to provide practical skills on cultivation of MP, identification of thickets of wild MP, familiarization with methods of studying MP reserves and providing

recommendations on rational use of natural resources.

8. Competencies according to the educational program:

Soft-skills / General competences (GC):

GC 6. Knowledge and understanding of the subject area and understanding of professional activity.

Hard-skills / Professional (special) competences (PC):

PC 16. The ability to organize and carry out the procurement of medicinal plant raw materials in accordance with the rules of the Good practice of cultivation and collection of raw materials of plant origin (GACP), as a guarantee of the quality of medicinal plant raw materials and medicines based on them. The ability to predict and calculate ways to solve the problem of preservation and protection of thickets of wild medicinal plants, in accordance with current legislation.

PC 20. Ability to develop methods of quality control of medicinal products, including active pharmaceutical ingredients, medicinal plant raw materials and auxiliary substances using physical, chemical, physico-chemical, biological, microbiological, pharmacotechnological and pharmaco-organoleptic control methods.

9. Program learning outcomes (PLO):

PLO 1. To carry out professional activities in social interaction based on humanistic and ethical principles; to identify future professional activity as socially significant for human health.

PLO 2. Apply knowledge from general and specialized disciplines in professional activity.

PLO 3. To comply with the norms of the sanitary and hygienic regime and the requirements of safety equipment when carrying out professional activities.

PLO 4. Demonstrate the ability to independently search, analyze and synthesize information from various sources and use these results to solve typical and complex specialized tasks of professional activity.

PLO 12. Analyze information obtained as a result of scientific research, summarize, systematize and use it in professional activities.

PLO 28. Organize and carry out rational procurement of medicinal plant raw materials. Develop and implement measures for the protection, reproduction and rational use of wild species of medicinal plants.

10. Status of the educational component: *compulsory*

11. **Prerequisites of the educational component:** it is based on the knowledge obtained by students of higher education when studying pharmacognosy with the basics of resource science.

12. **The amount of the educational component:** 90 hours, 3 ECTS credits: 89 hours of independent work.

13. Organization of training:

The form of teaching the educational component: conducting practical classes.

The content of the educational component:

Module 1. Acquisition of skills in the procurement, storage and processing of medicinal plant raw materials and raw materials used in pharmacy, care of cultivated medicinal plants and plants used in pharmacy. Determination of stocks of medicinal plants, rational use of natural resources.

Content module № 1. Procurement, storage and processing of medicinal plant materials and raw materials used in pharmacy.

Topic 1. Acquaintance with the program, calendar, tasks and practice base.

Topic 2. Acquaintance with wild medicinal plants in various phytocenoses. Morphological description and definition of medicinal plants. Herbalization of medicinal plants.

Topic 3. Acquaintance with the organization of procurement of MPM. Mastering the methods of harvesting, drying, bringing MPM to a standard state, packing and labeling MPM.

Topic 4. Mastering the express method of phytochemical analysis. Commodity analysis of a sample of MPM prepared individually.

Content module № 2. Care of cultivated medicinal plants and detection of thickets of wild medicinal plants

Topic 5. Acquaintance with the main cultivated medicinal plants and methods of their cultivation.

Topic 6. Getting to know the basics of studying stocks of wild medicinal plants with the aim rational use of natural resources of Medicinal plants and their protection.

14. **Types and forms of control:** control of content modules: written control, control of practical skills; programmable control.

Semester control form: semester diff. credit.

15. Evaluation system for the educational component:

The results of the semester control in the form of a semester differentiated assessment are evaluated on the ECTS scale, a 100-point scale and a four-point scale («excellent», «good», «satisfactory», «unsatisfactory»).

Points from the educational component are calculated according to the following ratio:

Types of assessment	Maximum number of points (% of the number of points per module - for content modules)
Module 1.	
Content module 1: <ul style="list-style-type: none"> • assessment of topics (1-4); • control of content module 1. 	50 (50 %)
Content module 2: <ul style="list-style-type: none"> • assessment of topics (5-6); • control of content module 2. 	50 (50 %)
Semester control of the module 1	100

The independent work of students of higher education is evaluated during the control of the content module

16. Політики освітньої компоненти:

Academic Integrity Policy. It is based on the principles of academic integrity stated in the provisions of the document "On measures to prevent cases of academic plagiarism at the NUPh ". Writing off when evaluating the success of a student of higher education during control activities in practical (seminar, laboratory) classes, control of content modules and semester exams is prohibited (including using mobile devices). Abstracts must have correct text references to the used literature. The detection of signs of academic dishonesty in the student's written work is a reason for the teacher not to enroll it.

Class attendance policy. A student of higher education is obliged to attend classes (Provisions of the document "On the organization of the educational process of the NUPh") according to the schedule (<https://nuph.edu.ua/rozklad-zanyat/>), to observe ethical norms of behavior.

Policy regarding deadlines, working out, rating increase, liquidation of academic debt. The completion of missed classes by a student of higher education is carried out in accordance with the Provisions of the document "Regulations on the completion of missed classes by students and the procedure for eliminating academic differences in the curricula of the NUPh " in accordance with the timetable for making up missed classes established by the department. Increasing the rating and liquidating academic debt from the educational component is carried out by the students in accordance with the procedure specified in the Provisions of the document "On the procedure for evaluating the results of training of students of higher education at the NUPh".

Applicants of higher education are obliged to comply with all deadlines set by the department for the completion of written works from the educational component. Works that are submitted late without valid reasons are assessed at a lower grade - up to 20% of the maximum number of points for this type of work. Policy on appeals of assessment from the educational component (appeals). Applicants of higher education have the right to contest (appeal) the evaluation of the educational component obtained during control measures. The appeal is carried out in accordance with the Provisions of the document "Regulations on appealing the results of the semester control of the knowledge of students of higher education at the NUPh".

17. Informational and educational and methodological support of the discipline:

Mandatory literature	<ol style="list-style-type: none"> 1. Pharmacognosy: textbook for higher school students / V.S. Kyslychenko, L.V. Upyr, Ya.V. Dyakonova, V.Yu. Kuznetsova, I.G. Zinchenko, O.A. Kyslychenko; ed. by V.S. Kyslychenko. – Kharkiv : NUPh : GoldenPages, 2011. – 552 p.; il. 2. Pharmacognosy: textbook for students of higher / V.S. Kyslychenko, L.V. Lenchyk, I.G. Gurieva et al.; ed. by V.S. Kyslychenko. – Kharkiv : NUPh : Golden Pages, 2019. – 584 p. 3. Medicinal plants resource science : handbook for students of higher schools / V.S. Kyslychenko, L.V. Upyr, I.G. Zinchenko, O.A. Kyslychenko, S.I. Stepanova; ed. by V.S. Kyslychenko. – Kharkiv : NUPh : Golden Pages, 2012. – 168 p.
Additional literature for in-depth study of the educational component	<ol style="list-style-type: none"> 1. Text book of Pharmacognosy and Phytochemistry / A. Dhole, V. Dhole, V. Yeligar, Ch. Magdum. Pharma Career Publication, 2019. – 778 p. 2. Gokhale S. B., Kokate C. K., Purohit A. P. A textbook of Pharmacognosy. 29th Edition. 2017. 284 p. 3. Kumar N. A Textbook Of Pharmacognosy. A.I.T.B.S. Publishers, India. 2010. 502 p. 4. Shah B. N., Seth A.K. Textbook of Pharmacognosy and Phytochemistry. Elsevier.

	<p>2010. 587 p.</p> <p>5. Singh A. A Textbook of Pharmacognosy. Pharma Book Syndicate. 2013. 836 p.</p> <p>6. British Pharmacopoeia Commission, 2016. <i>British Pharmacopoeia</i>. London: TSO.</p> <p>7. European Pharmacopoeia. 8th ed including supplements 1 (2014), 2 (2014), 3 (15), 4 (15), 5(2015). Council of Europe, Strasbourg, France. 2014.</p> <p>8. Textbook of Pharmacognosy and Phytochemistry - E-Book / Shah B., Seth A. – Elsevier Health Sciences, 2012. – 620 p.</p>
<p>Current electronic information resources (magazines, websites) for in-depth study of the educational component</p>	<p>1. Website of the Department of Pharmacognosy and Nutriciology – www.cnc.nuph.edu.ua</p> <p>2. Website of the NUPh library – http://lib.nuph.edu.ua</p> <p>3. Electronic archive of the NUPh – http://dspace.nuph.edu.ua</p> <p>4. Center for Distance Technologies of the National Academy of Sciences of Ukraine – pharmel.kharkiv.edu</p> <p>5. NUPh. Online tests – http://tests.nuph.edu.ua</p> <p>6. Vernadsky National Library of Ukraine – http://www.nbu.gov.ua</p> <p>7. V.G. Korolenko Kharkiv State Scientific Library – http://korolenko.kharkov.com</p>
<p>Moodle distance learning system</p>	<p>https://pharmel.kharkiv.edu/moodle/course/view.php?id=4014</p>

18. Technical and software of the educational component: computers, Wi-Fi access point, multimedia projector, multimedia screen, herbarium fund - more than 3000, collection of MPM and raw materials of animal origin - more than 500; collection of medicines - more than 300.