Pharmacognosy
The syllabus of the discipline 2021

TEACHERS

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1. **Name of higher education institution and department:** National university of pharmacy, department of chemistry of natural compounds and nutriciology.
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4. **Information about teachers:**

Natalia POPOVA

Doctor of Pharmaceutical Sciences, Professor, Professor of the Department of Chemistry of natural compounds and nutriciology of the National Pharmaceutical University. Experience of scientific and pedagogical activity – 38 years. Reads courses: Pharmacognosy, Resourse science of medicinal plants, Nutritiology (for Ukrainian and foreign citizens studying in English). Research interests: chemistry of natural compounds, plant cultivation.

Ganna TARTYNSKA

Candidate of Pharmaceutical Sciences, assistant of department of chemistry of natural compounds and nutriciology of the National university of pharmacy. Experience of scientific and pedagogical activity – 9 years. Reads courses: Pharmacognosy, Resourse science of medicinal plants, Nutritiology (for Ukrainian and foreign citizens studying in English). Research interests: chemistry of natural compounds, plant cultivation.

Kateryna SKREBTSOVA

Candidate of Pharmaceutical Sciences, assistant of department of chemistry of natural compounds and nutriciology of the National university of pharmacy. Experience of scientific and pedagogical activity – 6 years. Reads courses: Pharmacognosy, Resourse science of medicinal plants, Nutritiology (for Ukrainian and foreign citizens studying in English). Research interests: chemistry of natural compounds, plant cultivation.

5. **Consultations:** take place every Tuesday from 11.00 to 14.00 at the Department of Chemistry of Natural Compounds and Nutriciology.
6. **Brief annotation:** the discipline "Pharmacognosy" is a mandatory discipline for the second (master's) level in the specialty 226 Pharmacy, industrial pharmacy, educational program "Pharmacy". Final control - exam.
7. **The purpose of the discipline:** to teach students on morphological grounds to find and identify medicinal plants in nature, to know the periods and rational methods of collection, primary processing, drying conditions, packaging, storage rules of LRS; perform commodity, macroscopic, microscopic, phytochemical, luminescent and chromatographic analysis of LRS, products of its processing and raw materials of animal origin, which is necessary in the practical activities of the pharmacist.
8. **The format of the discipline:** conducting lectures and laboratory classes for optimal mastering of topics.
9. **Program learning outcomes: Based on the learning outcomes, higher education students will be able to:**

- According to the results of training, applicants for higher education will be able to:
- explain the methods of harvesting, drying, storage of LRS depending on the morphological groups and classes of BAS
- apply the characteristics of medicinal plants and LRS in professional activities;
- develop an action plan for the rational procurement of raw materials;
- apply knowledge of the chemical composition of LRS in the collection, storage and analysis of raw materials of plant and animal origin and drugs;
- to draw a conclusion about the quality of raw materials based on the results of pharmacopoeial analysis;

to interpret the connection of the chemical structure of BAS with pharmacological action.

- develop information leaflets, make reports for doctors and provide advice to the public on issues related to LR, raw materials and drugs of natural origin.

10. Scope of the discipline: 9 ECTS credits: 146 hours of classroom classes, of which 16 hours - lectures, 122 hours - laboratory classes. 101.5 hours of independent work, 0.75 ECTS credits - exam.

11. Prerequisites of the discipline: "Latin", "Botany", "Organic Chemistry", "Biological chemistry", "Analytical chemistry", "Biophysics", "Physical and colloid chemistry", "Normal and pathological human physiology".

12. Hardware and software: computers for testing, multimedia device, screen.

13. Policies of academic discipline: no forms of violation of academic integrity are tolerated. In case of such events - response in accordance with the provisions of NUPh.

14. The scheme of the discipline:

Data	**Lectures**	Materials of educational and methodical complex
I semester		
07.09.2021	General characteristic of polysaccharides and lipids. Medicinal plants and raw material containing polysaccharides and lipids.	https://pharmel.kharkiv.edu/moodle/course/view.php?id=2784
14.09.2021	General characteristic of vitamins. Medicinal plants and raw material containing vitamins.	
21.09.2021	General characteristic of isoprene derivatives. General characteristic of iridoids.	
28.09.2021	Medicinal plants and raw material containing isoprene derivatives and bitters.	
05.10.2021	Medicinal plants and raw material containing isoprene derivatives and bitters.	
12.10.2021	General characteristic of essential oil. Analysis of essential oil.	
19.10.2021	Medicinal plants and raw material containing essential oil (monoterpenes).	
26.10.2021	Medicinal plants and raw material containing essential oil (sesquiterpenes).	
02.11.2021	Medicinal plants and raw material containing essential oil (aromatic components). General characteristic of resins and balsams.	
09.11.2021	General characteristic of saponins.	
16.11.2021	Medicinal plants and raw material containing saponins.	
23.11.2021	General characteristic of cardiac glycosides. Medicinal plants and raw material containing cardiac glycosides.	
30.11.2021	General characteristic of phenolic compounds.	
07.12.2021	Medicinal plants and raw material containing simple phenols.	
14.12.2021	General characteristic of lignans and xanthones.	
21.12.2021	Medicinal plants and raw material containing lignans and xanthones.	
II semester		

	General characteristic of coumarins and chromons. Medicinal plants and raw material containing coumarins and chromons.	https://pharmel.kharkiv.edu/moodle/course/view.php?id=2784
	General characteristic of flavonoids. Medicinal plants and raw material containing flavonoids.	
	General characteristic of quinones. Medicinal plants and raw material containing antraquinones.	
	General characteristic of alkaloids. Medicinal plants and raw material containing alkaloids.	
	General characteristic of alkaloids. Medicinal plants and raw material containing alkaloids.	
	Medicinal plants and raw material containing alkaloids.	
	Medicinal plants and raw material containing various biological active compounds.	
	Purpose and tasks of resource science of medicinal plants. Search for industrial arrays of medicinal plants. Geobotanical bases of resource science of medicinal plants. Determination of yield of medicinal plant raw materials by different methods and accounting of raw material stocks. Periodicity of exploitation of industrial stocks of medicinal plants. Drawing up plans for the volume of procurement of medicinal plant raw materials. Design of cartographic material.	
Data	**Laboratory lesson**	Materials of educational and methodical complex
I semester		
01.09-03.09	Chemical, morphological and anatomical analysis of MPM containing carbohydrates.	https://pharmel.kharkiv.edu/moodle/course/view.php?id=2784
06.09-10.09	Chemical, morphological and anatomical analysis of MPM containing lipids and lipoids.	
13.09-17.09	Chemical, morphological and anatomical analysis of MPM containing vitamins.	
20.09-24.09	Chemical, morphological and anatomical analysis of MPM containing organic acids and compounds of silicon.	
27.09-01.10	*Control of the SM 1*	
04.10-08.10	Chemical, morphological and anatomical analysis of MPM containing iridoids and other bitters.	
11.10-15.10	Chemical, morphological and anatomical analysis of MPM containing essential oils, monoterpenoids.	

18.10-22.10	Chemical, morphological and anatomical analysis of MPM containing monoterpenoids, sesquiterpenoids.	
25.10-29.10	Chemical, morphological and anatomical analysis of MPM containing sesquiterpenoids.	
01.11-05.11	Chemical, morphological and anatomical analysis of MPM containing sesquiterpenoids, aromatic compounds.	
08.11-12.11	Chemical and morphological analysis of MPM containing resins and balsams.	
15.11-19.11	Chemical, morphological and anatomical analysis of MPM containing steroids, triterpenoids, saponins.	
22.11-26.11	Chemical, morphological and anatomical analysis of MPM containing steroids, triterpenoids, saponins.	
29.11-03.12	Chemical, morphological and anatomical analysis of MPM containing cardiac glycosides.	
06.12-10.12	Chemical, morphological and anatomical analysis of MPM containing cardiac glycosides.	
13.12-17.12	*Control of the SM 2*	
20.12-24.12	***Final module control of Module 1.***	
10.01-14.01.22	***Rating increase of module control of Module 1.***	
II emester		
31.01.2022-29.05.2022	Chemical, morphological and anatomical analysis of MPM containing simple phenolics and their glycosides, lignans, xanthones.	https://pharmel.kharkiv.edu/moodle/course/view.php?id=2784
	Chemical, morphological and anatomical analysis of MPM containing coumarins and chromones.	
	Chemical, morphological and anatomical analysis of MPM containing flavonoids – I.	
	Chemical, morphological and anatomical analysis of MPM containing flavonoids – II.	
	Chemical, morphological and anatomical analysis of MPM containing anthracene derivatives.	
	Chemical, morphological and anatomical analysis of MPM containing anthracene derivatives.	
	Chemical, morphological and anatomical analysis of MPM containing tannins.	
	Chemical, morphological and anatomical analysis of MPM containing tannins.	
	Control of the SM 3	

	Chemical, morphological and anatomical analysis of MPM containing alkaloids – I.	
	Chemical, morphological and anatomical analysis of MPM containing alkaloids – II.	
	Chemical, morphological and anatomical analysis of MPM containing alkaloids – III.	
	MP and MPM, containing different groups of BAC. Animal-derived raw material. Determination of identity and quality of MPM	
	Tasks of Medicinal plants resource science. Basic geobotanical and resource science terms. Selection of objects for resource surveys.	
	Estimation of the resources amount of medicinal plant material on certain brushwood using methods of registration plots, model specimens and projecting covering. Calculation of the plant material biological and operational reserves.	
	Control of the SM 4	
	Final module control of Module 2.	
	Final module control of Module 2.	
	Exam in the discipline	Consultation before the exam

15. Evaluation system and requirements: evaluation is carried out on a 100-point scale: current control - 1-2 points, final control of assimilation of MR 1– 13-22 points, final control of assimilation of MR 2 - 9-12 points, final control of assimilation of MR 3– 11 - 18 points, final control of MR mastering 4– 13-22 points, final modular control - 25-40 points. Exam - 60-100 points. Forms of control: oral examination, written theoretical and test control.