Odessa National Medical University
Faculty of Pharmacy
Department of Pharmacology and Pharmacognosy

Syllabus course

Pharmaceutical botany

Amount	4.3 credits / 150 hours
Semester, year of study	III semester, 2nd year of study
Days, time, place	According to the schedule in the classroom 101 of the Department of Pharmacology and Pharmacognosy (pharmacognosy cycle). Street Malinowski, 37
Teacher (s)	Rozhkovsky Yaroslav Vladimirovich, Doctor of Medicine, Professor Bogatu Svitlana Ihorivna, Candidate of Medical Sciences, Assistant Kovalchuk Iryna Viktorivna, Candidate of Pharmaceutical Sciences, Assistant
Contact phone	0931874230 0961051345
E-mail	yarro@ukr.net - Rozhkovsky Ya.V. pharmbotany2021@gmail.com Rich Svetlana Igorevna kivi2510@gmail.com - Kovalchuk IV
Workplace	Office № 107 (Bogatu SI, Kovalchuk IV) № 105 (Rozhkovsky YV) of the Department of Pharmacology and Pharmacognosy. Street Malinowski - 37
Consultations	*Eye consultations* : Thursday from 15.00 to 17.00; Saturday from 9.00 to 13.00 *Online consultations:* Thursday from 15.00 to 17.00; Saturday from 9.00 to 13.00 https://moodle.odmu.edu.ua/ or via *Telegram / viber*

COMMUNICATION

Communication with students will be through face-to-face meetings. In case of transition to distance learning, communication with students will be carried out by means of E-mail and programs: Microsoft Teams, Telegram and Viber.

COURSE ANNOTATION

The subject of study of the discipline

The subject of study of the discipline "Pharmaceutical Botany" are plant cells and tissues, vegetative and generative organs of plants, some medicinal representatives of cyanobacteria, fungi, higher spores, gymnosperms and angiosperms, their systematic, ecological, biocoenotic, geographical and individual pharmacological characteristics. plant groups.

Prerequisites and postrequisites of the course (Place of discipline in the educational program):

The discipline "Pharmaceutical Botany" lays the foundations for the study of disciplines "Educational Practice in Pharmaceutical Botany", "Pharmacognosy" and "Educational Practice in Pharmacognosy".

The purpose of the course.

The aim is: to achieve an understanding of the structure, chemical composition and functions of plant cells, tissues, organs and organisms in general. Master the theoretical foundations of the structure, classification, taxonomy, ecology and geography of medicinal plants and fungi, their importance and use in medicine, pharmacy, etc. Master the methods and procedures of macro- and microscopic analysis of plant organs. Use knowledge of morphology, anatomy, ecology of medicinal plants in specific situations. Demonstrate the ability to draw conclusions about the life form, age of the plant, the peculiarities of ecological conditions of existence; to determine diagnostic signs of organs and medicinal plant raw materials on the basis of macro- and microscopic analysis of plant objects.

To establish the ability to identify and describe the morphological and anatomical features of individual organs of medicinal plants as medicinal plant raw materials. Acquire the ability to form a holistic view of the plant and its ecology on the basis of a set of individual morphological-anatomical and ecological-geographical features.

Tasks of the discipline :

knowledge of medicinal plants, their anatomical and morphological structure, basics of life, reproduction, geographical distribution, classification, use, basics of ecology, structure, development and location on the globe of plant communities.

Expected results

According to the study of the discipline, students must

know:

- definition of pharmaceutical botany as a science, its tasks and connection with professionally oriented pharmaceutical disciplines and professional activity;
- the role and importance of plants in nature and human life, use in pharmacy and medicine;
- features of structure, classification, functioning of plant cells and tissues, their diagnostic features that are important in the identification of medicinal plant raw materials;
- qualitative histochemical reactions for determination of crystalline inclusions, stock products, secondary changes of the cell membrane, etc .;
- morphological structure, functions of vegetative and generative organs of plants, their diversity;
- regularities of anatomical structure and types of vegetative organs of plants and their metamorphoses;
- general features of families and species morphological and anatomical features of medicinal plants, cyanobacteria, fungi; ecological conditions of their growth, resources, presence of certain groups of biologically active compounds, value, use;

- elements of ecology, coenology and geography of plants;

be able:

- work with a microscope;
- manufacture, study and describe micropreparations, perform histochemical reactions;
- dissect, describe the generative organs of the plant, make flower formulas;
- determine, recognize by anatomical and morphological features of plant organs, their metamorphosis;
- identify the morphological characteristics of plants and their belonging to certain taxa;
- identify plants by herbarium specimens, drawings, photos, in nature;
- describe and reflect the external and internal structure of plant organs, summarize the results, formulate conclusions and argue them, design research results.

COURSE DESCRIPTION

Forms and methods of teaching

The course will be presented in the form of lectures (10 hours) and practical classes
(70 hours), organization of independent work of students (70 hours).

The study of the discipline should be implemented on the basis of methods of problem statement, heuristic, research, interactive (project method).

The content of the discipline

Topic 1. The structure of the plant cell. Plastids, vacuoles, and the composition of cell sap. Stock products, mineral inclusions of plant cells.

Topic 2. The structure of the cell membrane. Changes in the cell membrane.

Topic 3. Fabrics. Structure, functions of creative and integumentary tissues.

Topic 4. Structure and functions of the main, mechanical and excretory tissues.

Topic 5. Structure and functions of conductive tissue. Xylem and phloem. Vascular-fibrous bundles.

Topic 6. Final lesson on the studied topics in cytology and histology of plants

Topic 7. The root. Types of roots. Types of root systems. Root changes.

Topic 8. Anatomical structure of the root.

Topic 9. Stem. Sprout. Kidneys. Shoot modifications.

Topic 10. Anatomical structure of stems of monocotyledonous and dicotyledonous herbaceous plants. Anatomical structure of stems of woody plants and rhizomes.

Topic 11. Leaflet. Modifications of leaves. Anatomical structure of leaves.

Topic 12. Flower. Inflorescence

Topic 13. Seeds. Fruit

Topic 14. Final lesson on the studied topics of morphology and anatomy of plants

Topic 15. Prokaryotes. Blue-green algae, their representatives having medical application.

Topic 16. Algae, general characteristics, their representatives, having medical application.

Topic 17. Kingdom of mushrooms, general characteristics. Lower mushrooms, their representatives having medical application.

Topic 18. Classes of ascomycetes and deuteromycetes, their representatives having medical application.

Topic 19. Classes of basidiomycetes and lichens, their representatives having medical application.

Topic 20 Higher spore avascular plants. The department is moss-like, its representatives having medical application.

Topic 21. Higher spore vascular plants. Department of ferns, horsetails and plaunopodobnye their representatives having medical application.

Topic 22. Seed plants. Department of gymnosperms. Class conifers, representatives of medical applications.

Topic 23. Final lesson on the studied topics of spore plants and fungi

Topic 24. Angiosperms department. General characteristics of classes.

Topic 25. Families of buttercups and poppies, their representatives having medical application.

Topic 26. Families of buckwheat and cabbage, their representatives having medical application.

Topic 27. Rosaceae and honeysuckle families, their representatives with medical applications.

Topic 28. Bean and heather families, their representatives with medical applications.

Topic 29. Families of celery and ragweed, their representatives with medical applications.

Topic 30. Solanum and morning families, their representatives with medical applications.

Topic 31. The labiatae family and its aster representatives, which have medical applications.

Topic 32. Medicinal plants common in Ukraine

Topic 33. Final lesson on the studied topics in the taxonomy of seed plants

List of recommended reading

1. Serbin, AG Pharmaceutical botany: textbook. / AG Serbin, LM Sira, TO Slobodyanyuk; for order. LM Gray. - Vinnytsia: NEW BOOK, 2015. - 420 p.
2. Pharmaceutical botany. Module 1, III semester. Textbook in diagrams and tables for students of pharmaceutical faculties. / Kornievsky YI, Kornievskaya VG, Panchenko SV - ZSMU Zaporizhia Publishing House, 2016. - 94 p.
3. Anatomy and morphology of plants in drawings / TN Gontovaya, VP Rudenko, LM Seraya, VP Gaponenko, AG Serbin, TV Oproshanskaya, VV Mashtaler, OS Mala, SV Romanova - H .: NUPh, 2014. - 63 p.
4. Systematics of plants in drawings: [textbook. manual for students. higher education za-kladiv] / [compiled by: TV Oproshanska, VP Rudenko, VV Mashtaler, OS Mala.]) - Kh .: NUPh, 2015. - 65 p.

5. Pharmaceutical botany. Morphology of generative organs. / Kornievskaya VG, Kornievsky YI, Panchenko SV, Ivankina NM - ZSMU Publishing House, Zaporizhia, -2015. - 108 p.
6. Pharmaceutical botany: textbook / TMGontova, AHSerbin, SMMarchyshyn; edited by TMGontova. - Ternopil: TSMU, 2018 p. - 380 p.

EVALUATION

Methods of current control: Evaluation of the success of the study of each topic of the discipline is performed on a traditional 4-point scale.

Current performance is calculated as the average current score, ie the arithmetic mean of all grades obtained by the student on a traditional scale, rounded to 2 (two) decimal places , for example 4.75.

Assessment of current control in the discipline:

The value of the assessment is **"excellent** ": the student shows special creative abilities, is able to acquire knowledge independently, without the help of the teacher finds and processes the necessary information, is able to use acquired knowledge and skills to make decisions in unusual situations, convincingly argues answers.

The value of the grade **"good** ": the student is fluent in the studied amount of material, applies it in practice, freely solves exercises and problems in standard situations, independently corrects mistakes, the number of which is insignificant.

The value of the assessment is **"satisfactory** ": the student reproduces a significant part of the theoretical material, shows knowledge and understanding of the basic provisions; with the help of the teacher can analyze the educational material, correct mistakes, among which there are a significant number of significant ones.

The value of the assessment is **"unsatisfactory** ": the student has the material at the level of individual fragments that make up a small part of the study material.

Only those students who do not have academic debts and have an average score of at least 3.00 for their current academic activity are allowed to take the final attestation.

Assessment of the current test control in the discipline:

- "5" - 100-91% of correct answers;
- "4" - 90-71% of correct answers;
- "3" - 70-60.5% of correct answers;
- "2" - less than 60% of correct answers.

Forms and methods of final control:

The form of final control of knowledge in the discipline is an exam.

The average score for the discipline is translated into the traditional grade from the discipline on a 4-point scale and is regarded as the ratio of this arithmetic mean to the percentage of mastering the required amount of knowledge in this subject.

GPA for discipline	The ratio received by the student average score for the discipline to the maximum possible value of this indicator	Score from discipline on a 4-point scale (traditional assessment)
4.45 - 5.0	185-200	5
3.75 - 4.44	151-184	4
3.0 - 3.74	120-150	3

Independent work of students .

Students' independent work, which is provided by the topic of the lesson along with the classroom work, is assessed during the current control of the topic in the relevant lesson. Assimilation of topics that are submitted only for independent work is checked at the last lesson.

COURSE POLICY ("rules of the game")

Deadline and recompilation policy: tasks to be completed on time according to the deadline. For late performance of the task the student receives an unsatisfactory grade. Rearrangement is carried out according to the approved schedule.

Academic Integrity Policy *:*

Observance of academic integrity by students of education provides:

- independent performance of educational tasks, tasks of current and final control of learning outcomes (for persons with special educational needs this requirement is applied taking into account their individual needs and opportunities);
- links to sources of information in the case of the use of ideas, developments, statements, information.

Policy attendance and tardiness . To obtain a satisfactory grade, it is mandatory to attend and work in classrooms (lectures and practical classes). The student is allowed to be late for no more than 10 minutes.

Mobile devices: You can use mobile devices in class with the permission of the teacher.

Audience behavior:

While in the audience are important: respect for colleagues; tolerance for others; susceptibility and impartiality; the ability to disagree with the opinion, but to respect the personality of the opponent (during discussions); careful argumentation of the opinion; adherence to the ethics of academic relations.