



ФАРМАЦЕВТИЧЕН ФАКУЛТЕТ МЕДИЦИНСКИ УНИВЕРСИТЕТ - СОФИЯ

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Approved from the Faculty council 2018 г.

DEAN:
(prof. Al. Zlatkov, DSc)

DEPARTMENT PHARMACOGNOSY

SYLLABUS of PHARMACEUTICAL BOTANY

INCLUDED IN “**PHARMACY**” EDUCATION CURRICULUM.

DEGREE OF EDUCATION: “**MASTER**”

CREDITS (ECTS): **10**

ANNOTATION

Pharmaceutical botany is closely linked to the main pharmaceutical discipline of pharmacognosy. These two disciplines are essential in modern Pharmacy education, because phyto-preparations consist more than 40% of all medicines on the world market. Pharmaceutical botany lays the foundations of knowledge on medicinal plants. The course covers basics of plant cytology and histology, anatomy, morphology of vegetative and generative organs as well as plant systematics. The histological and anatomical features of plants are the basis for microscopic analysis of plant substances. The students are introduced to the basic principles of plant anatomy and morphology in order to apply them to the identification of medicinal plants. Systematics is focused on a set of important medicinal plants used in pharmaceutical practice. Attention is paid to their classification, nomenclature, ecological specifics and factors affecting the dynamics of accumulation of biologically active compounds. Modern approaches in the search for new medicinal plants, resources and their sustainable use are discussed. Main groups of fungi and algae, lichens and some medicinal mosses and spore plants as well as medicinal gymnosperms are considered. The main focus is on angiosperm medicinal plants – both monocotyledonous and dicotyledonous.

Pharmaceutical botany is taught in the form of lectures and practical classes during IVth and Vth semesters. The total hours are respectively 60 academic hours of lectures and 60 academic hours of labs.

Labs teach basic histological and anatomical features of plants and key families comprising important medicinal plants.

Summer field course

Essential part of the pharmaceutical botany course is the summer field course. Students collect medicinal plants in their natural habitats. The summer field course takes place within 6 days in the summer between IV and V semesters. Students produce their own herbarium as a result of the field course. They discuss on it during the exam and their knowledge is tested.

Student control and evaluation system: current control - two colloquiums, (one per semester), current identification of medicinal plants (herbarium sets - three per semester), practical exam on microscopic slides and herbarium sets, ongoing individual assignments, and a final exam at the end of the course - written and oral.

English language training

SYLLABUS

1. Subject, tasks and sections of botany. Importance of medicinal plants for phytotherapy and for the production of medicinal preparations. Factors and dynamics of the accumulation of biologically active compounds. Modern approaches in the search for new medicinal plants.
2. Plant cytology Cellular structure of plants. Features of the plant cell. Cytoplasmic organelles. Plastids. Vacuole and cell sap. Inclusions in the cell: storage substances and excretory products. Cell wall – formation, chemical composition, structure and functions, growth, types of thickenings and chemical changes in the composition of the cell wall.
3. Botanical classification and nomenclature. Taxa and taxonomic categories.
4. KINGDOM of FUNGI Characteristics, structure and reproduction. Physiologically active substances produced by mushrooms. Classification of Fungi: Classes Zygomycetes, Ascomycetes and Basidiomycetes
5. KINGDOM of PLANTS - THALLUS PLANTS. Algae - characteristic. Classification of algae from the divisions: Cyanophyta, Rhodophyta, Bacilariophyta, Phaeophyta and Chlorophyta. Lichens - characteristics, structure, physiological-biochemical features and ecology
6. VASCULAR PLANTS Plant tissues
7. Morphology of a root (Radix). Metamorphoses of the root Anatomical structure of the root - primary and secondary. Physiological functions of the root.
8. Stem morphology (Caulis). Metamorphoses of the stem. Anatomical arrangement of stem. Primary structure in monocotyledonous and dicotyledonous herbaceous plants. Secondary growth and secondary structure of stem in woody plants
9. Morphology of a leaf (Folium). Leaf types and leaf metamorphosis. Anatomical arrangement of a leaf - dorsoventral and isolateral structure. Photosynthesis, respiration and transpiration. Plant growth and development
10. SPORE PLANTS - medicinal mosses, horsetails and ferns
11. SEED PLANTS - Division Magnoliophyta: general characteristics and classification. Comparison of Gymnosperms and Angiosperms. Some medicinal Gymnosperms

12. Morphology of flowers (Flos) - symmetry, flower formulas and diagrams Pollination. Fertilization. Seed formation.

13. Morphology and classification of inflorescences (Inflorescentia).

14. Morphology of fruit (Fructus) and seed (Semen). Origin, device and classification. Anatomical structure of fruit and seed. Fruit and seed dispersal.

15. ANGYOSEM (FLOWERING) PLANTS - Comparison between monocotyledonous and dicotyledonous plants. Classification of flowering plants

16. Bioresources of medicinal plants in Bulgaria. Biodiversity, anthropoppression and strategies for sustainable use and conservation of medicinal plants. Regulatory framework - Medicinal Plants' Act, Biodiversity Act.

17. Ecological groups of plants. Biologically active substances and environmental factors influencing their synthesis. Introduction and cultivation of medicinal plants.

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Date:

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