Pharmacobotany 1 - Theory

Code: MEA-OG1E
Department: Department of Pharmacognosy

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Short Course Description:
Pharmacobotany covers all pharmaceutical aspects of botany, including cytology, histology, morphology and taxonomy of plants. Plant systematics discusses the geographical origin of plant species, the possibilities of their cultivation and protection. A special emphasis is laid on chemotaxonomic aspects, since the medicinal effect of a plant is often related to its taxonomic classification and chemical characteristics. Practical instruction focuses on the knowledge of medicinal plants, including the confident use of plant identification keys. Based on their knowledge of histology and morphology, students are required to apply proper anatomical terms, and finally identify plant species (taxa). The thorough knowledge of both general and specific pharmacobotany is a prerequisite of studying pharmacognosy.

Course requirements:
Absences:
Maximum of 25 % absence allowed.

Midterm tests:
Students have to pass (min. 60%) two written exams based on lecture materials. The exams will be held on the 7th and 13th week of the semester. For each test, maximum two other chances (B and C chance) will be offered for students who do not pass the exam on the first occasion (A chance).

Exam:
The criterion of admission to the exam is the successful completion of the practice carried out in parallel (midsemester grade with the result different from failed).

The grades of the 2 written lecture tests serve as the basis of the final course grade.

Exam topics:
1. Structure of the plant cell.
2. Plastids and inclusions.
3. Structure of the cell wall.
4. Meristematic tissues.
5. Epidermal tissue; stomata.
6. Trichomes, secondary epidermis.
7. Vascular tissues
8. Vascular bundle types.
9. Ground tissues: parenchyma, collenchyma.
10. Ground tissues: sclerenchyma, secretory tissues.
11. Root morphology and anatomy

12. Modified roots.
13. Shoot morphology and anatomy.
14. Shoot types.
15. Leaf morphology and anatomy.
16. Leaf arrangement (phyllotaxis). Leaf venation.
17. Flower morphology.
18. Inflorescence types.
19. Fertilisation, embryogenesis, ovule and seed.
20. Fruit types: dehiscent fruits.
21. Fruit types: indehiscent fruits.
22. Fruit types: compound and aggregate fruits.

Textbooks:

Compulsory literature:

- Farkas Á.: Pharmacobotany 1, University of Pécs, Institute of Pharmacognosy, Pécs, 2010
- Lecture materials (PowerPoint slides) will be available from the website of the Department of Pharmacognosy (Educational Materials).

Recommended literature:

- Farkas Á., Papp N., Bencsik T., Horváth Gy.: Digital Herbarium and Drug Atlas, electronic learning material, 2014 TÁMOP-4.1.2.A/1-11/1-2011-0016
- D.F. Cutler, T. Botha, D.W. Stevenson: Plant Anatomy. An Applied Approach, Wiley-Blackwell, 2008
- R.F. Evert, S.E. Eichhorn: Esaus Plant Anatomy: Meristems, Cells and Tissues of the Plant Body: Their Structure, Function and Development, 3rd edition, Wiley
- A. Fahn: Plant Anatomy, 4th edition

Lecture topics (Dr. Ágnes Farkas):

1. Structure of the plant cell. Plastids and inclusions.
2. Structure of the cell wall.
3. Plant tissues I. Meristematic tissues.
4. Plant tissues II. Epidermal tissue; stomata, trichomes, secondary epidermis.
5. Plant tissues III. Vascular tissues; vascular bundle types.
6. Plant tissues IV. Ground tissues: parenchyma, collenchyma, sclerenchyma, secretory tissues.
7. 1st written exam
8. Root morphology. Modified roots. Root anatomy
9. Shoot morphology and anatomy. Shoot types.
10. Leaf morphology and anatomy. Leaf arrangement (phyllotaxis). Leaf venation.
11. Flower morphology. Inflorescence types.
12. Fertilisation, embryogenesis, ovule and seed. Fruit types.
13. 2nd written exam
14. Taxonomic categories, chemotaxonomic relations, rules of nomenclature.