Pharmaceutical Botany I.

2019/2020, 2nd semester, Schedule

Lecture

1. week (07. 02. 2020.) Introduction the Pharmaceutical Botany General characterization of plants. Photo-autotrophy, photosynthesis, Vacuole and cell wall.

2. week (14. 02. 2020.) Life cycle of plants. Sexual and vegetative reproduction. Definitions of terms: drug, narcotic, doping.

3. week (21. 02. 2020.) Chloroplasts and photosynthesis. Plastid types.

4. week (28. 02. 2020.) The cell wall: components, thickening types in different plant tissues. Carbohydrate metabolism.

5. week The content sent out, (*06. 04. 2020. lecture*) The biochemistry of the carbohydrate decomposition. Krebs cycle. Amino acid biosynthesis.

6. week The content sent out (*13. 04. 2020. lecture*) Nucleus, nuclear envelope pores. Endoplasmic reticulum. Golgi complex. Autophagy in plants. Polyploidy in plants.

20. 04. 2020. Spring break

7. week Nitrogen metabolism. Nitrogen fixation. Transporters, nitrate and nitrite reductases. Transamination, amino acid metabolism. Scheduled: 27. 03. 2020. 12:30-13:15.

8. week Secondary plant metabolism I. Azotids, Terpenoids. General view, principles of their categorization. Detailed discussion of pharmaceutically important compounds. Scheduled: 03. 04. 2020. 12:30-13:15

9. week 10. 04. 2020 – holiday

10. week Secondary plant metabolism II Polyketides, Phenoloids and saccharides. General view, principles of their categorization. Detailed discussion of pharmaceutically important compounds. Scheduled: 17. 04. 2020. 12:30-13:15

11. week Tissue and organ differentiation. Plant body, vegetative- generative transmission. Meristems (stem cells, primary and secondary meristems). Vernalization. Photoreceptors in plants. Plant hormones. Scheduled: 24. 04. 2020. 12:30-13:15

12. week 01. 05. 2020 – holiday

13. week Epidermis and external secretory structures. Stoma complexes. Glandular hairs, nectaries, osmophores. The root hair. The periderm and the rhitidome. Scheduled: 08. 05. 2020. 12:30-13:15

14. week Parenchyma, storage. Supportive ground tissues tissues. Secretory structures. Laticifers. Extracellular secretion. Scheduled: 15. 05. 2020. 12:30-13:15

Practice

1. week (2020. 02. 03-07.) Presentation of the schedule of the semester. The conditions of fulfilling the requirements of the practice. General information, fire and accident safety trainings. General features of the plant cell.

2. week (2020. 02. 10-14.) General features of the plant cell. Examinaton of cytoplasm streaming (cyclosis), plasmolysis, anthocyanin.

3. week (2020. 02. 17-21.) Examination of plastids – identification and detection of starch.

4. week (2020. 02. 24-28.) Examination of the cell wall – components of the cell wall, their identification, the most frequent types of cell wall thickenings.

5. week (2020. 03. 02-06.) Examination of crystals: chemical composition, detection, types and importance for diagnostics (drug identification).

6. week (2020.03.09-13.) Sending out practical exercises about cytology to get prepared for the first mid-term.

2020.03.16-20 spring break. Deadline for submission of the practical exercises distributed earlier. Sending out the materials and the practical exercises related for the next week (meristems and ground tissues).

7. week (2020.03.23-27.) Consultation concerning the cytological practical exercises, discussion of the results and the solutions. Consultation overview of the topic 'meristems and ground tissues' and consultative discussion of the practical exercises. Sending out the materials and the practical exercises related for the next week (conductive tissues).

8. week (2020.03.30.-04.03) Consultation on the cell types of conductive tissues and their organization into different bundles, and their occurrence. Discussion of the practical exercises of the previous week. Sending out the materials and the practical exercises related for the next week (dermal tissues).

9. week (2020.04.06-10.) Consultation on the dermal tissue system (features of the rhizodermis and the epidermis, stoma types, hairs and their functions. Discussing the solutions of the practical exercises of the previous week. Sending out the preparatory materials and the practical exercises for the next week (morphological analyses of one typical early-spring plant).

10. week (2020.04.14-17). Consultation concerning the practical exercises and materials that had been sent out. Basic concepts of morphology, floral formula, detailed morphological and chemotaxonomical analysis of a selected plant family and its early-spring example species (*Ficaria verna* – Ranunculaceae). Sending out preparatory material and practical exercises for the next week (Chemotaxonomy Part I., medicinal plants to recognize and to describe).

11. week (2020.04.20-24.) Consultation concerning the exercises distributed and the list of the medicinal plants to recognize and to describe (Chemotaxonomy I.). Sending out the preparatory exercises for the next week (midterm about plant tissue systems as well as about Chemotaxonomy part I.).

12. week (2020.04.27.-05.01.) Online reporting in Moodle system, in the form of a test and in some other alternative form (topic: Plant tissue systems and Chemotaxonomy part I.). Sending out the preparatory materials and practical exercises for the next week (Chemotaxonomy Part II., medicinal plants to recognize and to describe, plant families with examples from late-spring flowering plants – *Vinca minor* (Apocynaceae), *Chelidonium majus* (Papaveraceae).

13. week (2020.05.04-08.) Consultation concerning the exercises distributed and the list of the medicinal plants to recognize and to describe (Chemotaxonomy II.). Detailed morphological and chemotaxonomical analysis of the two plant families and their example species. Sending out the preparatory exercises for the next week mid-term (plant morphology, chemotaxonomy, characterization of important medicinal plant families and their example species, as well as Chemotaxonomy II.)

14. week (2020.05.11-15.) Online reporting in Moodle system, in the form of a test and in some other alternative form (Plant morphology and important studied medicinal plant families/species and Chemotaxonomy part II.).