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| **STUDY PROGRAMME:** | **Professional Undergraduate Study Programme *Agriculture***  Specific field of study: Course foundations | |
| **Course:** | **AGRICULTURAL BOTANY** | |
| **Course code:** 35762  **Course status:** compulsory | **Semester: II** | **ECTS credits: 4** |
| **Course holder:** | **Siniša Srečec,** Ph. D.,professor of professional studies | |
| **Course associates:** | **Renata Erhatić,** Ph. D.,professor of professional studies | |
| **Modes of delivery:** | **Number of hours** | |
| **Lectures** | 30 | |
| **Excersises** | 30 | |

**Course objectives:** To acquire a necessary level of fundamental knowledge about plant species, their systematics, morphological, physiological, and ecological characteristics, sufficient for synthesizing new facts and procedures that will be learned during the course of study.

**Course content**

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|  | **Course units** | **Modes of delivery:** | | | **Places of delivery** |
| **L** | **E** | **S** |
| 1. | |  | | --- | | Botany as a scientific discipline and division of botany into its respective branches;  Cytology, histology, morphology, and anatomy of plants, plant systematics, plant physiology, microbiology (bacteriology, virology, and mycology), genetics | | 1 |  |  | Lecture hall |
| 2. | |  | | --- | | Cytology: Structure of a typical plant cell (chemical composition and cell organelles) | | 2 |  |  | Lecture hall |
| 3. | |  | | --- | | Primary structure of plant cells using the example of resting cells of the inner epidermis of onion bulbs (Allium cepa) | |  | 2 |  | Laboratory |
| 4. | |  | | --- | | Cell division: Mitosis and meiosis | | 2 |  |  | Lecture hall |
| 5. | |  | | --- | | Histology: Division of plant tissues and their roles | | 2 |  |  | Lecture hall |
| 6. | |  | | --- | | Structure of stomata and the stomatal apparatus on the abaxial side of a dorsiventral type of ivy leaf (Hedera helix) | |  | 2 |  | Laboratory |
| 7. | |  | | --- | | Morphology and basic systematics of lower plants | | 2 |  |  | Lecture hall |
| 8. | Colloquium I. | | | | |
| 9. | |  | | --- | | Morphology of higher plants – Structure of a typical cormus | | 2 |  |  | Lecture hall |
| 10. | Root | 1 |  |  | Lecture hall |
| 11. | Stem | 1 |  |  | Lecture hall |
| 12. | Leaf | 1 |  |  | Lecture hall |
| 13. | Anatomical structure of monocotyledonous stems using the example of ornamental sedge (Carex ornithopoda) and/or tall oat-grass (Arrhenatherum elatius) |  | 2 |  | Laboratory |
| 14. | Anatomical structure of dicotyledonous stems using the example of rose (Rosa centifolia) |  | 2 |  | Laboratory |
| 15. | Anatomical structure of roots using the example of dandelion (Taraxacum officinale), alfalfa (Medicago sativa), or dock (Rumex crispus and Rumex obtusifolius) |  | 2 |  | Laboratory |
| 16. | Plant physiology: Water and assimilate transport | 1 |  |  | Lecture hall |
| 17. | Plant physiology: Photosynthesis and respiration | 1 |  |  | Lecture hall |
| 18. | Morphology of generative organs of plants (division into angiosperms and gymnosperms) |  |  |  |  |
| Colloquium II. | | | | | |
| 19. | Gymnospermae and Angiospermae  Horticultural and dendrological plant species represented in Dr. Gustav Bohutynsky Memorial Park, with a special focus on conifers Pinaceae and the evolutionarily oldest angiosperms Magnoliaceae |  | 2 |  | Practicum |
| 20. | Microsporogenesis and megasporogenesis – pollination – double fertilization – fruit – seed | 2 |  |  | Lecture hall |
| 21. | Common structural characteristics of flowers, inflorescences, and fruits of various plant families | 2 |  |  | Lecture hall |
| 22. | Germination and emergence – growth and development of plants | 1 |  |  | Lecture hall |
| 23. | Weeds, their classification, significance in agrobiocenoses, harmfulness, and the most significant weed species | 1 |  |  | Lecture hall |
| 24. | Systematics of higher plants | 6 |  |  | Lecture hall |
| 25. | Family: Rosaceae |  | 2 |  | Practicum |
| 26. | Family: Ranunculaceae |  | 2 |  | Practicum |
| 27. | Family: Poaceae |  | 2 |  | Practicum |
| 28. | Family: Fabaceae |  | 2 |  | Practicum |
| 29. | Family: Chenopodiaceae |  | 2 |  | Practicum |
| 30. | Family: Solanaceae |  | 2 |  | Practicum |
| 31. | Family: Brassicaceae |  | 2 |  | Practicum |
| 32. | Field instructions for project task preparation |  | 2 |  | Practicum |
|  | **In total** | **30** | **30** |  |  |

**L=Lectures, E=Excersises, S=Seminars**

**Learning outcomes (LO)**

LO 1. Present external and internal morphological characteristics of plants.

LO 2. Relate the process of transpiration and the transport of water and dissolved plant nutrients (through symplast and apoplast) to the internal structure of the root, stem, and leaf.

LO 3. Present the structure of the generative organs of gymnosperms and angiosperms.

LO 4. Relate the processes of microsporogenesis, megasporogenesis, and double fertilization.

LO 5. Integrate plant species into higher taxonomic units based on their common morphological characteristics.

LO 6. Assess the economic value of vegetation cover in agricultural and/or natural plant communities.

Course holder:

Siniša Srečec, Ph.D., professor of professional studies

Križevci, July 2024