|  |  |
| --- | --- |
| **Title and Code** of the subject: **Plant Physiology MTB7014A** | **ECTS Credit Points: 3** |
| **Type** of the subject: compulsory  |
| **Ratio of theory and practice:** 66% theory 33% practice |
| **Type and number of classes per semester**: 28 hours lecture and 14 hour practice per **semester** Number of teaching hours / week : eg.:2+1 (lecture and practice) |
| **Type of exam**: signature for practice + exam  |
| **Subject in the curriculum:** semester 2 |
| Preliminary requirements:Considerable experience in chemistry and botany is assumed. |

|  |
| --- |
| **Summary of content - theory**: The study of plants as producers is really important because of their position at the energy and elemental intake portion of the energy pyramid and the food net. The lecture with practice is designed to provide comprehensive exposure to the subject of plant physiology. Students learn about the functions of plants throughout their development from seeds through reproduction. Lectures and laboratory practices are covered from the biochemical level to the organism level. Laboratory exercises complement lectures. |
| **Schedule:**

|  |  |  |
| --- | --- | --- |
| week | Lecture | Laboratory |
| 1 | Basics in plant physiology, structure and funtion | Investigation of basic characteristics of enzyme  |
| 2 | Leaves, light absorption in photosyntheis | Photosynthetic pigments |
| 3 | Carbon acquisition and fixation | CO2 fixation |
| 4 | Respiration (photo-, and dark) | Intensity of respiration |
| 5 | Plant water relations: stomata, transpiration and plants in water-limited environments | Plant water relations |
| 6 | Functions of nutrients in plant I. | Mineral nutrition and plant growth |
| 7 | Functions of nutrients in plant II. | Mineral nutrition and plant growth |
| 8. | Symbiotic relationships for nutrient capture, Nitrogen assimilation | Mineral nutrition and plant growth |
| 9. | Plant hormones – regulation of development and Plant hormones – environmental acclimation I. | Plant hormones |
| 10. | Plant hormones – regulation of development and Plant hormones – environmental acclimation II. | Plant hormones |
| 11. | Flowering | Plant hormones |
| 12. | Fruit and seeds | Plant storage products |
| 13. | Seed germination/dormancy  | Germination and shooting |
| 14. | Senescence | *In vivo* physiological measurements |

 |
| **Summary of content - practice**: |
| Skills to be learnt: 1. critical thinking
2. communication to evaluate data
3. fundamental knowledge about several basic theories in plant physiology
 |
| **Literature, handbooks in English**  |
| Taiz, L., Zeiger, E. (2007) Plant Physiology. 4th ed. Sinauer Associates, Inc. ISBN 0-87893-823-0 or online versionBuchanan, B. B., Gruissem, W., Jones, R. L. (2015) Biochemistry and Molecular Biology of Plants. John Wiley & Sons, Inc. ISBN: 978-0-470-71421-8Lambers, H., Chapin, F. S. and Pons, T. L. (2011) Plant Physiological Ecology. Springer, New York. ISBN 0-387-98326-0 |
| **Competencies gained** *(acc. to the Regulation on training and outcome requirements)* |
| 1. **Knowledge:**
* fundamental knowledge about several basic theories in plant physiology
* interaction between physiological processes
* how can we modify, influence these processes
1. **Skills:**
* critical thinking
* decision making
1. **Attitude:**
* to be motivated to work hard
1. **Autonomy and responsibility:**
* autonomy and responsibility in data discussion/presetation/evaluation
 |

|  |
| --- |
| **Responsible lecturer: Dr. Veres Szilvia, associate professor**  |
| **Terms of course completion:** |
| 1. Completing assLab Reports
2. Participating in all of the practices
3. Exam
 |
| **Form of examination:** oral or written exams |
| **Requirement(s) to get signature:** |
| 1. Completing assLab Reports
2. Participating in all of the practices
 |