

General plant physiology (IIInd Year of study, IIIrd SEMESTER)

Credit value (ECTS) 7

Course category

Domain (Imposed)

Course holder:

Assist. Prof. Dr. Alina Elena MARTA

Discipline objectives (course and practical works)

The course aims at studying the fundamental processes of plant: absorption of minerals and energy and turn them into their own organic substances, photosynthesis, respiration, biosynthesis of organic substances. It also will study biological processes underlying the formation of the harvest, directing it to increase agricultural production and understanding the processes of transfer of substance and energy in the biosphere. Students will be knowledge on the processes of growth and development of plants, and water use, fertilization, various hormone treatments etc, in order to stimulate these processes and mechanisms of resistance of plants to abiotic and biotic environmental conditions. Practical work aims to familiarize students with technical work in laboratories for plant physiology knowledge of general notions relating to physical phenomena at the cellular, physiological processes at the cellular level, water regime of plants, mineral nutrition of plants, photosynthesis, transformation and circulation of substances organic plant fermentation and aerobic respiration and growth of plants.

Contents (syllabus)

Course (chapters/subchapters)
Introduction to plant physiology
Plant cell physiology: physiological functions of cellular components, the physical properties of cellular material; physiological properties of living matter; exchange of water between the plant cell and the external environment.
Water regime of plants: the role of water in plant life; forms of plant and water conditions; water absorption by plants; water transport in the plant body; removal of water by plants.
Plant mineral nutrition: mineral nutrition research methods; mineral uptake by plants; factors affecting the absorption of mineral elements in plants; the physiological role of mineral elements.
Photosynthesis: definition and importance in nature; carbon sources and light; method for studying photosynthesis; organs and organelles of photosynthesis; photosynthesis mechanism; factors affecting photosynthesis; photosynthesis and production.
Transformation, movement and deposition organic substances: synthesis, transformation and the role of organic substances: carbohydrates, proteins, fat, vitamins, organic acids, tannins, resins, essential oils, alkaloids and glicozizii; the movement of the organic substances in plants.
Plant respiration: definition and importance; aerobic respiration: methods of determination, respiration of aerobic respiration influence on diefriților factors; anaerobic respiration; knowledge about the importance of breathing.

Plant growth: cell growth stages; increasing organ; the increasing influence of external factors (temperature, light, humidity and soil); internal factors influence on growth (growth promoting hormones, hormones, growth inhibitors); synthetic bioactive substances.

Development of plants: the characteristics of the development cycle; flowering stages and determinism; the influence of external factors on flowering; internal factors influence the flowering; flowering proper (trophic factors, hormonal factors).

Practical works
Presentation of Plant Physiology laboratory: safety rules; laboratory equipment and utensils; fair working practices, organization of the seminar (informing students on discipline objectives, the targeted skills, the criteria and evaluation methods).
Physical phenomena at the cellular level
Physiological processes at the cell level
Water regime of plants
Plant mineral nutrition
Photosynthesis
Transformation and movement of organic substances
Aerobic respiration and fermentation
Plant growth
Final colloquium of knowledge evaluation

Bibliography

1. Jitoreanu Carmenica Doina, 2002 - *Fiziologie vegetală*. Edit. "Ion Ionescu de la Brad", Iași.
2. Jitoreanu Carmenica Doina, 2007 – *Fiziologia plantelor*. Edit. "Ion Ionescu de la Brad", Iași.
3. Jitoreanu Carmenica Doina, Toma Liana-Doina, Slabu Cristina, Marta Alina Elena, 2011- *Lucrări practice de Fiziologia plantelor* - Edit. Ion Ionescu de la Brad, Iasi
4. Toma Liana Doina, 1998 - *Fiziologie vegetală*. Edit. "Ion Ionescu de la Brad", Iași.
5. Toma Liana Doina, Robu T., 2000 - *Fiziologie vegetală*. Edit. "Ion Ionescu de la Brad", Iași.
6. Toma Liana Doina, Jitoreanu Carmenica Doina, 2000 – *Fiziologia plantelor*. Edit. "Ion Ionescu de la Brad", Iași.
7. Toma Liana Doina, Jitoreanu Carmenica Doina, 2007 – *Fiziologie vegetală*. Edit. "Ion Ionescu de la Brad", Iași.
8. Toma Liana-Doina, Milică C., Robu T., Jitoreanu Carmenica-Doina, Slabu Cristina, 1999 - *Fiziologie vegetală - Indrumător de laborator* - Edit. "Ion Ionescu de la Brad", Iași.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Written exam	60%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

Contact**Şef lucrări dr. Alina Elena MARTA**

Facultatea de Agricultură - USAMV Iaşi

Aleea Mihail Sadoveanu nr. 3, Iaşi, 700490, România

telefon: 0040 232 407348

E-mail: alinamarta_fiziologie@yahoo.com