Study Programme: MSc in Biology

Degree level: Master Degree

Course Title: Physiological mechanisms of plant ecological adaptations

Professor: Nataša Nikolić, PhD

Required/Elective Course: Elective Course

Number of ECTS: 6

Prerequisites:

Course Objective: Introduction to basic physiological processes of plants under stress (flooding, drought, extreme temperatures, pollution), as well as to specific metabolic mechanisms enabling adaptation, growth and survival of plants.

Course Outcome: Upon completion of this course students will be able to:
- understand biochemical and physiological mechanisms in metabolism of plants under stress
- understand physiological mechanisms in ecological adaptation during growth and development of plants under stress.

Students will be able to use their knowledge in further education and institutions dealing with ecology and environment protection.

Course Content:

Theoretical part

Students will be acquainted with basic biochemical and physiological processes involved in adaptation of plants to environment, from the aspect of general principles of homeostasis and integrity of biological systems. Physiological response to flooding, extreme temperatures, drought. Significance of different pathways of photosynthetic assimilation of CO_2: C_3, C_4, CAM. Cycling of elements. Osmoregulation, water conservation, leaf modifications. Ecophysiology of N_2-fixing systems. Relations between plants, and between plants and other organisms. Atmospheric pollutants.

Practical part

Student research work and lab work.

Reading List:

1. Kastori, R. (2006): Plant physiology. Verzal, Novi Sad (in Serbian).
2. Stevanovic, B., Jankovic, M. (2001): Ecology of plants. NNK International, Belgrade (in Serbian).
3. Dawson, J., Lucas, R. (2005): The Nature of Plants –Habitats. Challenges, and Adaptations, Timber Press.
4. Dickison, C.W. (2000): Integrative plant anatomy. Harcourt academic press, New York, London.
5. Larcher, W. (2003) Physiological Plant Ecology. Springer, ISBN 3540435166, p. 513
6. Pugnaire, F.I., Valladares, F. (1999) Handbook of Functional Plant Ecology. CRC Press, p. 920
7. Lambers, H., Pons, T.L., Chapin, F.S. (1998) Plant Physiological Ecology, Springer
8. Scientific papers published in scientific journals

Total hours:			8	
Lectures: 3	Practicals:	Other:	Student research work: 5	

Methods of instruction: Theoretical lectures. Practical part (laboratory exercises; student research work – writing and defense).

Assessment (maximum number of points 100)

Requirements	**points**	**Final exam**	**points**
Active participation in lectures	10	Test(s)	60
Pre-exam activity	30		