

<b>Study Programme:</b> Field Crops Growing
<b>Course Unit Title:</b> Ecology and Agroecosystems Protection
<b>Course Unit Code:</b> 7MGB9001
<b>Name of Lecturer(s):</b> Full professor Ivana Maksimović, Associate professor Srđan Šeremešić, Assistant professor Marina Putnik-Delić
<b>Type and Level of Studies:</b> Master Academic Studies
<b>Course Status (compulsory/elective):</b> Compulsory
<b>Semester (winter/summer):</b> Winter
<b>Language of instruction:</b> English
<b>Mode of course unit delivery (face-to-face/distance learning):</b> Face to face
<b>Number of ECTS Allocated:</b> 6
<b>Prerequisites:</b> None
<b>Course Aims:</b> This subject aims to introduce students to the agro-ecological bases of crop production and types and sources of pollution of agro-ecosystems and possibilities and ways of its protection.
<b>Learning Outcomes:</b> Upon passing the exam, students will be competent to recognize the elements of the agro-ecosystems and their interconnection, which will enable them to analyze and understand problems that can occur with deterioration of the production sources (soil, water) and pollution deriving from human activities.
<b>Syllabus:</b> Agriculture in the light of agroecology. Cycling of material and energy in the agro ecosystem. The importance of leaf area, light and temperature to yield formation. Preventive cultural practices to mitigate the effects of drought. Balance of anthropogenic soil humus. Soil compaction and features of excessively wet soils. Ecological consequences of the application of organic and mineral fertilizers, pesticides, irrigation, municipal solid waste, wastewater, sewage sludge and liquid manure. Conservation tillage (strengths, weaknesses), reclamation treatment. Ameliorative fertilization. Alteration of weed communities in agroecosystem and control of resistant weeds. Management practices against erosion and deflation. Definition, causes, types and degree of agroecosystems contamination. Harmful effects of contaminants on wildlife. Pollution and preservation of air. Ecological significance of air, sources and classification of air pollutants, effects of pollution on soils and plants, plants tolerant to air pollutants, opportunities to reduce adverse effects in plant production. Pollution and water protection: Definition, types and sources of water pollution. Pollution of groundwater, and consequences. Indicators of water quality. Purification of water. Pollution and protection of soil. Sources and categories of soil pollution and damage. Environmental aspects of pesticides and fertilizers application. The effects of irrigation on soil properties. Soil contamination with heavy metals and radionuclides. Agro-economic importance of forests, forest belts and green spaces. Systems of agriculture and protection of agro ecosystems. The role of genetics and plant breeding the protection of agroecosystems.
<b>Required Reading:</b> Craig C. Sheaffer Kristine M. Moncada, Introduction to Agronomy: Food, Crops, and Environment. Cengage Learning; 2 edition, 2011 Stefan R. Gliessman, Agroecology: ecological processes in sustainable agriculture. CRC Press, 1997 Adel El Titi, Soil Tillage in Agroecosystems. CRC Press, 2002 Hans Lambers, F. Stuart Chapin III, Thijs L. Pons, Plant Physiological Ecology, second edition. Springer 2008

Taiz L, Zeiger E, Møller IM, Murphy A (2014) Plant Physiology and Development, Sixth Edition, Sinauer Associates.

**Weekly Contact Hours:** 5

**Lectures:** 45

**Practical work:** 30

**Teaching Methods:**

Lectures, Practical classes, Consultations, Research work, Seminar papers

**Knowledge Assessment (maximum of 100 points):**

<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation		written exam	40
Practical work		oral exam	40
Preliminary exam(s)		.....	
Seminar(s)	20		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.