

Study Programme: Soil and plant nutrition; Genetics, plant breeding and seed science		
Course Unit Title: Molecular mechanisms of plant resistance on stress		
Course Unit Code: 3MZI1114, 3MZI1114		
Name of Lecturer(s): Prof. Boris Popović, PhD; Ass. Prof. Ružica Ždero Pavlović, PhD		
Type and Level of Studies: Master Academic Studies		
Course Status (compulsory/elective): Elective		
Semester (winter/summer): Winter		
Language of instruction: English		
Mode of course unit delivery (face-to-face/distance learning): Face-to-face		
Number of ECTS Allocated: 6		
Prerequisites: None		
Course Aims: The aim of the course is to achieve scientific skills and academic skills, develop creative abilities and mastering specific practical skills needed for future career development that are aligned with the directions of development of modern scientific disciplines in the world.		
Learning Outcomes: Developing the ability of students to follow modern achievements in science and profession, developing the ability to solve problems using scientific methods and procedures in the process of plant growing and the production of healthy food as well as developing critical and creative thinking.		
Syllabus: <i>Theory</i> Communication mechanisms of living organisms through chemical signals. The role of chemical signals in intercellular communication. Reactive forms of oxygen and nitrogen. Antioxidant systems of plants and oxidative stress. Molecular mechanisms of resistance of plants to abiotic stress (radiation, heat stress, water stress, drought, high salt, heavy metals and herbicides). The mechanisms of plant resistance to biotic stress. Hypersensitivity reactions and apoptosis. Systemic resistance. Genetic basis of plant resistance to stress. Induced plant resistance to stress. <i>Practice</i> Determination of antioxidant selected parameters and parameters of oxidative stress in plants. Determination of the activity of antioxidant enzymes. Determination of total antioxidant activity. Determination of malondialdehyde. Determination of reduced glutathione content of phenolic compounds and photosynthetic pigments.		
Required Reading: 1. Jacquot, J.P. Advances in botanical research-Oxidative stress and redox regulation in plants. Academic press, 2009. 2. Štajner, D., Popović, B. Oxidative stress in plants. Faculty of agriculture, Novi Sad, 2008.		
Weekly Contact Hours:	Lectures: 2	Practical work: 2
Teaching Methods: Depending on the number of applicants, lectures and practical classes will be held or consultations and seminar		
Knowledge Assessment (maximum of 100 points):		

Pre-exam obligations	points	Final exam	points
Active class participation		written exam	40
Test	30	oral exam	
colloquium	30		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			