

<b>Title</b>	<b>Interaction of plant cell and the environment</b>						
<b>Code</b>	ZDIB24						
<b>Study Program</b>	Postgraduate Interdisciplinary University Programme Environment protection and Nature Conservation						
<b>Semester</b>	III.						
<b>ECTS</b>	5						
<b>Status</b>	elective						
<b>Lecturer</b>	assistant professor Ivna Štolfa, PhD						
<b>Co-Lecturers</b>							
<b>Requirements for Enrolment</b>	must be enrolled in a doctoral study						
<b>Objectives</b>	The aim of the course is to introduce students with the influence of various biotic and abiotic factors on plant antioxidative response and mechanisms for regulating photosynthesis under the stress.						
<b>Learning Outcomes</b>	<p>After completing the course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe the structure of plant cells and the antioxidative system in plants.</li> <li>2. Analyse the effects of various abiotic stress factors on the plant.</li> <li>3. Clarify the mechanisms regulating photosynthesis under stress.</li> <li>4. Distinguish specific antioxidative mechanisms in plants involved in the response to stress.</li> <li>5. To practice the knowledge learned by determining the individual components of the antioxidative system in plants in various stress conditions.</li> </ol>						
<b>Connection between Learning Outcomes, Curricular and Student Activities</b>	<b>Student Activities</b>	<b>ECTS</b>	<b>Learning Outcomes</b>	<b>Curricular Activities</b>	<b>Methods of Assessment</b>	<b>Credits*</b>	
						<b>min</b>	<b>max</b>
	Presence at the lecture with active participation	2	1-4	Attending lectures	Records, evaluation	9	15
	The presence at the practice with the active participation	1	5	Attending exercises	Records, evaluation	9	15
	Preparation for writtten exams	1,5	1-5	Knowledge test (colloquium and oral)	Colloquium and written exam	24	40
	Preparation for final exam	0,5	1-5	Final exam	Oral exam	18	30
	<b>Total</b>	<b>5</b>				<b>60</b>	<b>100</b>
	<b>Final grade:</b> <b>60-69,9 points:</b> <b>grade 2</b> <b>70-79,9 pointsa:</b> <b>grade 3</b> <b>80-89,9 points:</b> <b>grade 4</b> <b>90-100 points:</b> <b>grade 5.</b>						
<b>Consultations</b>	According to the agreement with the students						

<b>Learning Activities</b>	<b>Lectures</b>	<b>Seminars</b>	<b>Practice</b>
<b>Hours</b>	15	-	5
<b>Contents / Teaching Units</b>	Lecture: The structure of a plant cell. Antioxidative system in plants. The photosynthetic system of the plant. The impact of environmental stress factors on the plants - light, temperature, drought, salt stress, heavy metals, herbicides. The interactions of plants with other organisms - microbiological pathogens. Biotechnology. Practice: experimental techniques in the study of the antioxidative response of plants which comprise the spectrophotometric assay of antioxidative enzymes activity and antioxidant content and the semi-quantitative expression of the mRNA using the RT-PCR method.		
<b>Obligatory Literature</b>	Smith AM, Coupland G, Dolan L, Harberd N, Jones J, Martin C, Sablowski R, Amey A. 2010. Plant Biology. Garland Science, Taylor & Francis Group, New York. Madhava Rao KV, Raghavendra AS, Janardhan Reddy K. 2006. Physiology and Molecular Biology of Stress Tolerance in Plants. Springer, Nizozemska. Pevalek-Kozlina B. 2003. Fiziologija bilja. 1. izdanje. Profil, Zagreb.		
<b>Recommended literature</b>	Scientific papers.		
<b>Requirements for Aquiring Signature</b>	Students are required to actively participate at the lectures and the practice and perform all tasks.		
<b>Type of Exam</b>	Students take a written exam, which contributes 70% of the grade. Then take the oral exam, which contributes 30% of the grade.		
<b>Lectures Language</b>	Croatian		
<b>Quality Monitoring</b>	A Survey questioning with the possibility of verbal or written reviews after lectures or exams. Monitoring the performance of the examination.		