

Study program : ECOLOGY				
Type and level of studies: Master academic studies of the second degree				
Course unit: E208 – The mechanisms plant adaptation				
Teacher in charge: Marina Topuzovic, Ph.D.				
Language of instruction: English				
ECTS: 6				
Prerequisites: /				
Semester: Winter Semester				
Course unit objective				
<p>-To introduce students with the fundamental and practical knowledge in the field of anatomical and morphological structure of plant tissues and organs of ecological types of plants as the basis of their adaptability;</p> <p>-mastering the knowledge and skills necessary for identification;</p> <p>-understanding of the practical significance of adaptive mechanisms in plants;</p> <p>-the ability to define morpho-anatomical and physiological adaptive strategies of plants against various stress factors.</p> <p>Skills of teamwork, interpreting and presenting the results, the use of effective teaching.</p>				
Learning outcomes of Course unit				
<p>Knowledge: By mastering the program, students will gain knowledge about the basic principles of the effects of different stress factors on plants; the specifics of the anatomy and morphology of different ecological types of plants; acquire knowledge of a connection between the anatomical and morphological structure of tissues and organs and their role</p> <p>Skills: Students will master the techniques of laboratory work, the art of analyzing preparations; students will acquire the ability to identify and recognize certain types of adaptations and acquire the skills of field work.</p>				
Course unit contents <i>Theoretical classes</i> The concept of adaptation in plants. Adaptive value . Adaptive type . Adaptive mechanisms (strategies) in plants. The morphological and anatomical adaptations in the aquatic environment .The morphological and anatomical adaptations of plants in relation to light, temperature, soil, wind , stress ions , biotic stress, oxidative stress, multiple stress, anthropogenic factors. Comparative analysis of morphological, anatomical and physiological adaptation of plants to various stress conditions. Adaptive specifics of plants exposed to different pollutants . The adaptive aspects of secondary metabolites of plants. The potential application of adaptive mechanisms of plants in creating strategies for restoration of damaged ecosystems.				
<i>Practical classes</i> Exercise, Other modes of teaching				
Ways of solving particular environmental problems - the study of anatomy and morphology of specific plant tissues and organs as an expression of their adaptability to environmental factors.				
Literature				
Gurevitch, Scheiner, Fox (2005):The Ecology of Plants. The Science of Plant Ecology, pp. 465				
Plant Ecology (1996), Edited by Michael J. Crawley Blackwell Publishing, Second Edition pp. 742				
Abiotic stress in plants-Mechanism and adaptations (2011). Edited by Ar Cumar Shanker and B. Venkateswarly. In Tech Open access publisher, pp. 440				
Number of active teaching hours				Other classes
Lectures:	Practice:	Other forms of classes: mentoring (consultative) system	Independent work:	
Teaching methods				
<p>Methods of teaching: lessons are taught through lectures, colloquiums and seminar papers .</p> <p>The exercises are realized through : Field work : gathering and determining macrophytes at the sites of the city and the surrounding area; production and analyzing fresh and durable products.</p>				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures		oral examination	30	
practical classes/tests c		written examination	15	
Seminars/homework	35			
Colloquiums	20			
Other				
Grading system				

Grade	No. of points	Description
10	91 - 100	Excellent
9	81 - 90	Exceptionally good
8	71 - 80	Very good
7	61 - 70	Good
6	51 - 60	Passing
5	< 50	Failing