

Course Unit Descriptor

Study Programme: Soil, plant and genetics			
Course Unit Title: The Theory of Plant Breeding			
Course Unit Code: 19MZBGO01O003			
Name of Lecturer(s): Velimir N. Mladenov			
Type and Level of Studies: master academic studies			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): winter			
Language of instruction: serbian			
Mode of course unit delivery (face-to-face/distance learning): face to face			
Number of ECTS Allocated: 5			
Prerequisites: Principles of Genetic Manipulation, Basic Principles of Quantitative Genetic			
Course Aims: The aim of this course is to introduce students with the latest achievements in the field of genetics and new methods that can be used in plant breeding. The course is based on theoretical assumptions.			
Learning Outcomes: It enables students to understand contemporary trends in plant breeding and indicate which scientific disciplines they should focus their future work on.			
Syllabus: <i>Theory</i> Definition and importance of the subject. Plant breeding and social development. Sources of genetic variability in plants. Genetic base of breeding of self-pollinating and cross-pollinating plants. Trait, genotype, phenotype. Selection methods. The concept of creating new varieties. Hybridization parents selection. Number of cross combinations and size of F2 generation. Crossbreeding methods and their importance for success in hybridization. Ways of breeding plants-Genetic base and theory. Inbreeding and exploitation of heterosis. Recurrent selection. Using mutations and polypoids in breeding. Breeding by vegetative means. Chromosome engineering. Application of biotechnology in plant breeding. Individual traits selection and genetic gain from selection. Genetic composition and varieties adaptability. Recognition of varieties and the genetic base of seed production. <i>Practice</i> The practical part of teaching will be followed by teaching units and the students will prepare seminar papers from certain areas, which they will present during the practice. For the preparation of seminar papers, they will use the latest sources of literature from international journals.			
Required Reading: 1. Borojević, S. 1992: Principi i metodi oplemenjivanja bilja. Naučna knjiga, Beograd. 2. Bernardo, R. 2002: Breeding for quantitative traits in plants. Stemma Press, MN, USA. 3. Acquaah, G. 2007: Principles of Plant Genetics and Breeding. Blackwell Publishing. Oxford, UK.			
Weekly Contact Hours:	Lectures: 45	Practical work: 30	
Teaching Methods: The theoretical part of the teaching is conducted in the faculty lecture halls. Teaching is conducted through teacher lectures and student group work within the given topics.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation	10	written exam	30

Practical work	10	oral exam	20
Preliminary exam(s)		
Seminar(s)	30		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			