

<b>Study Programme: Fruit science, viticulture and horticulture, module Ornamental horticulture</b>		
<b>Course Unit Title: BREEDING OF HORTICULTURAL PLANTS</b>		
<b>Course Unit Code: 19.VI2007</b>		
<b>Name of Lecturer(s): Ass. Prof. Mirjana Ljubojević, PhD</b>		
<b>Type and Level of Studies: UNDERGRADUATE ACADEMIC STUDIES</b>		
<b>Course Status (compulsory/elective): Compulsory</b>		
<b>Semester (winter/summer):summer</b>		
<b>Language of instruction:English</b>		
<b>Mode of course unit delivery (face-to-face/distance learning): face-to-face</b>		
<b>Number of ECTS Allocated:4</b>		
<b>Prerequisites:N/A</b>		
<p><b>Course Aims:</b></p> <p>The goal is to acquire knowledge of the basic principles and methods of conventional and unconventional breeding of horticultural plants, which is a prerequisite for understanding and using sources of genetic variability in improving horticultural production and implementation of modern breeding methods and achievements within molecular biology.</p>		
<p><b>Learning Outcomes:</b></p> <p>Students will be able to think logically and conclude about the interaction of genotype and environmental conditions, which results in a phenotype and is an important factor in the choice of cultivars and rootstocks for certain agro-ecological conditions. By applying hybridization, tissue culture methods and selection from natural populations students will be able to contribute to the spread of new and better cultivars, with new or significantly improved characteristics in terms of resistance, productivity and decorativeness.</p>		
<p><b>Syllabus:</b></p> <p><i>Theory</i></p> <p>Introduction, history, significance and goals of ornamental plant breeding. Phytogeographic differentiation of plant genetic resources and their conservation. Sources of genetic variability - gene recombination and mutation, adaptability, phenotype and components of phenotypic variability. Methods of plant breeding - selection from natural populations, hybridization, selection of parental pairs and combination traits, clonal selection, tissue culture and genetic engineering, molecular markers, in vitro and marker-assisted selection, selection for specific traits. Recognition of varieties (cultivars), introduction and comparative experiments. Special breeding: breeding goals, breeding methods, heredity and breeding results for the most important woody and shrub species, annual, biennial and perennial flower species.</p> <p><i>Practice</i></p> <p>Systematics of starting material in breeding of horticultural plants, number of chromosomes and Latin names of the most important decorative species. Floristic areas and centers of origin of cultivated plants. Gene bank. Descriptors and electronic databases. Flowering time, morphological structure of flowers, methods of crossing, technique of crossing and raising seedlings. Incompatibility and methods of overcoming incompatibility. Practical work on micropropagation of plant genetic resources and embryo culture.</p>		
<b>Required Reading:</b> Borojević, S. Principles and Methods of Plant Breeding, Elsevier, 1990.		
<b>Weekly Contact Hours:4</b>	<b>Lectures:2</b>	<b>Practical work:2</b>
<b>Teaching Methods:</b>		

Lectures and Practical classes, Consultations if needed.

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

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