Study Programme: Agronomy

Course Unit Title: Biotechnology in the breeding of horticultural plants

Course Unit Code: 19.AGR104

Name of Lecturer(s): Ass. Prof. Mirjana Ljubojević, PhD

Type and Level of Studies: Doctoral studies

Course Status (compulsory/elective): elective

Semester (winter/summer): summer

Language of instruction: English

Mode of course unit delivery (face-to-face/distance learning): face-to-face

Number of ECTS Allocated: 7

Prerequisites:

Course Aims:

The aim of this course is to provide the foundations for research work and the implementation of biotechnology methods in the breeding of horticultural plants and to respond to the social, ecological and economic challenges leading to the students' individuality in the research work and implementation of biotechnology.

Learning Outcomes:

The course will combine basic, applied and developmental research that combined contribute to the implementation of new methods of molecular biology, tissue culture and genetic engineering in the breeding of horticultural plants, which will provide students with the basic knowledge for independent research in this area.

Syllabus:

Theory

Introduction - Structural genes, transcription and translation. Biotechnology as a science of the present and the future. Biotechnology as a subject of curiosity, research and a new way of thinking in the breeding of horticultural plants. Basic concepts of biotechnology. Areas of biotechnology - (1) Cell and tissue culture; (2) Gene and genomic technologies; (3) Genetic engineering. Application of achievements of biotechnology in agriculture. Genome mapping, QTL analysis and MAS selection. Implications of applying the achievements of biotechnology to the conservation of soil, plant and animal resources. Providing food that meets consumer needs in terms of quality and safety.

Practice

1) Getting accustomed the equipment for cell and tissue culture; Practical work on tissue culture. (2) Getting to know the equipment for working with molecular markers; Practical work on isozymes and DNA markers; (3) Familiarity with genetic engineering equipment and methods.

Required Reading: Selected papers from the leading scientific journals.

Weekly Contact Hours:	**Lectures:4**	**Practical work:6**

Teaching Methods:

Theoretical teaching takes place using the computer presentation method and other didactic means. Practical teaching takes place using visual methods in the laboratory.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	**Final exam**	points
Active class participation	10	written exam	

Practical work	10	oral exam	40
Preliminary exam(s)	20	…….	
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.			