

Study Programme: Phytomedicine			
Course Unit Title: <i>Application of beneficial microorganisms in phytopathology</i>			
Course Unit Code: 19.FTM038			
Name of Lecturer(s): Prof. Ferenc Bagi, PhD, Assoc. Prof. Mila Grahovac, PhD.			
Type and Level of Studies: UNDERGRADUATE ACADEMIC STUDIES			
Course Status (compulsory/elective): elective			
Semester (winter/summer): winter			
Language of instruction: Serbian/English			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: None			
Course Aims: Insight into beneficial microorganisms which can be used as plant disease biocontrol tools, to achieve sustainable agricultural production.			
Learning Outcomes: Introduction to microorganisms that provide successful control of plant diseases through competition, antagonism and superparasitism. Ability to follow current world trends in sustainable agricultural production and plant disease control obtaining healthy agricultural products and food safety.			
Syllabus: <i>Theory</i> Biopesticides market. Basic characteristics and origin of microorganisms (pseudofungi, fungi, bacteria, bacteriophages, viruses) that exhibit inhibitory or lethal effects on plant pathogens (phytopathogenic pseudofungi, fungi, bacteria and viruses). Modes of action of beneficial microorganisms against phytopathogenic microorganisms. Basic cultivation conditions and multiplication of useful microorganisms for plant diseases control. Practical application of beneficial microorganisms in phytopathology. Beneficial microorganisms from the genera: <i>Pythium</i> , <i>Trichoderma</i> , <i>Aspergillus</i> , <i>Bacillus</i> , <i>Pseudomonas</i> , <i>Streptomyces</i> . <i>Practice</i> Microorganisms growth and multiplication methods for testing their effect on plant pathogens. <i>In vitro</i> and <i>in planta</i> efficacy experiments. Optimisation of microorganisms production processes to maximize their potential to suppress the pathogens.			
Required Reading: Agrios, G.N. (2005): Plant Pathology. Elsevier, academic press, USA Copping, L. (2009): The Manual of Biocontrol Agents. A World Compendium, British Crop Production Council, United Kingdom			
Weekly Contact Hours:	Lectures: 30	Practical work: 30	
Teaching Methods: Lectures – oral presentation using visual methods - computer; use of other didactic tools (demonstrations, illustrations, board displaying). Practical classes – oral presentation using visual methods - computer; instructing students for independent individual work, use of different phytopathological and laboratory techniques for pathogen identification; consultations.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points

Active class participation	10	written exam	20
Practical work		oral exam	50
Preliminary exam(s)	15	
Seminar(s)	5		
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			