

<b>Study Programme:</b> Phytomedicine			
<b>Course Unit Title:</b> Application of beneficial microorganisms in phytopathology			
<b>Course Unit Code:</b> 19.FTM038			
<b>Name of Lecturer(s):</b> full prof. Mila Grahovac, ass. prof. Marta Loc			
<b>Type and Level of Studies:</b> Undergraduate academic study			
<b>Course Status (compulsory/elective):</b> elective			
<b>Semester (winter/summer):</b> winter			
<b>Language of instruction:</b> english			
<b>Mode of course unit delivery (face-to-face/distance learning):</b> face-to-face			
<b>Number of ECTS Allocated:</b> 6			
<b>Prerequisites:</b> None			
<b>Course Aims:</b> Insight into beneficial microorganisms which can be used as plant disease biocontrol tools, to achieve sustainable agricultural production.			
<b>Learning Outcomes:</b> 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.			
<b>Syllabus:</b>			
<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 surpress the pathogens.			
<b>Required Reading:</b>			
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			
<b>Weekly Contact Hours:</b> 3	<b>Lectures:</b> 1	<b>Practical work:</b> 2	
<b>Teaching Methods:</b>			
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.			
<b>Knowledge Assessment (maximum of 100 points):</b>			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation	10	written exam	20
Practical work		oral exam	50

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