

Study Programme: Agronomy			
Course Unit Title: Molecular characterisation of microorganisms			
Course Unit Code: 3DAI3112			
Name of Lecturer(s): Associate Professor Simonida Djuric, Assistant Professor Timea Hajnal – Jafari, Assistant Professor Dragana Stamenov			
Type and Level of Studies: Doctoral studies program - PhD			
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: 10			
Prerequisites: Master – Faculty of Agriculture; Master – Faculty of Life Science (biology, molecular biology, biology-chemistry), Master -FTS (environmental protection)			
Course Aims: Introducing students to the functioning of the microbial community, its ecology, genetic markers and molecular techniques used in their study.			
Learning Outcomes: Learning basic methods of molecular biology necessary in dealing with soil microorganisms, with special emphasis on the advantages and shortcomings that need to be seen in the choice of techniques.			
Syllabus: <i>Theory</i> Isolation, cultivation and preservation of microorganisms. Primary treatment of DNA – DNA isolation, molecules gel electrophoresis, staining DNA, markers. Modification of DNA - restriction fragment length polymorphism - RFLP. DNA amplification by polymerase chain reaction – PCR (rep-PCR, RAPD). Examples of amplification of 16S r DNA and nested 16S r DNA PCR, PCR product purification, restriction analysis of amplified ribosomal DNA - ARDRA. The amplification of selected genes. Sequencing. Plasmid DNA - features, characteristics and detection of plasmids. <i>Practice</i> Application of the selected technique in laboratory condition.			
Required Reading: Blaber, M.: Molecular Biology and Biotechnology, A virtual Textbook. Kowalchuk A. George: Molecular microbial ecology manual, Dordrecht, London, Kluwer Academic, 2004. Osborn, A., M.: Molecular Microbial Ecology, Pub. Oxford:BIOS Scientific, UK., 2003			
Weekly Contact Hours: 3	Lectures: 2	Practical work: 1	
Teaching Methods: Theoretical and practical instruction is given to the aid of modern technology in the respective classrooms and laboratories.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	Final exam	points
Active class participation		written exam	
Practical work	30	oral exam	70
Preliminary exam(s)		
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.			