

Study Programme: BSc in Ecology		
Course Unit Title: Biodegradation		
Course Unit Code: OE035		
Name of Lecturer(s): Associate Professor Maja Karaman		
Type and Level of Studies: Bachelor		
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: 5		
Prerequisites:		
<p>Course Aims: Training students to understand microbiological degradation processes in biotechnology and environmental protection. The course relies on previously acquired knowledge in Chemistry, Biochemistry, Microbiology, Microbiology Ecology, and aims to learn about the significance of their metabolic processes in the circulation of matter and the flow of energy through ecosystems.</p>		
<p>Learning Outcomes: Master essential knowledge about microorganisms, their importance in processes of material cycling and energy flow in the ecosystem and their significance in biotechnology and in the protection of the environment from anthropogenic pollution.</p>		
<p>Syllabus:</p> <p><i>Theory.</i> Through this course, students learn about the importance of microorganisms as producers of degradative enzymes, in the degradation of natural and anthropogenic waste. Introduction to biodegradation processes is easy and difficult degradable organic matter and xenobiotics (pesticides, polycyclic aromatic and halogenated compounds), with processes based on self-esteem of natural waters (anthropogenic recipes pollution) and biotechnological processes of sewage treatment. Biodegradation as the basis of the process of bioremediation.</p> <p><i>Practice.</i> Getting to know how to work in a microbiological laboratory. Acquisition of basic knowledge necessary for isolation, cultivation and elementary determination of microorganisms as the basis for experimental work and understanding physiology of microorganisms (enzymes: hydrolysis, esterases, proteases, lipases, saccharazas, cellulases etc.; microbial degradation of phenols, oil and derivatives, aromatic hydrocarbons, pesticides etc.) which is at the core of biodegradation processes in the service of biotechnology and environmental protection.</p>		
Required Reading:		
<ol style="list-style-type: none"> 1. Пејин Д. (2003) Индустијска микробиологија. Универзитет у Новом Саду, Технолошки факултет, Нови Сад. 2. Радновић Д., Матавуљ М., Караман М. (2007) Микологија, скрипта за студенте биологије. Издавач: ПМФ Нови Сад, Департман за биологију и екологију, Универзитет у Новом Саду. WUS Austria. 3. Alexander M. (1994) Biodegradation and bioremediation. Academic press. 4. Betts W.B. (1991) Biodegradation: natural and synthetic materials. Springer series in applied biology. 5. Chaudhry G.R. (1994): Biological Degradation and Bioremediation of Toxic Chemicals. Chapman & Hall, London. 6. Eriksson K.-E.L., Blanchette R.A., Ander P. (1990) Microbial and Enzymatic Degradation of Wood and Wood Components. Springer-Verlag. 7. Topalova Y., Dimkov R. (2003) Biodegradation of xenobiotics. Sofia University. 		
Weekly Contact Hours:	Lectures: 2	Practical work: 2

Teaching Methods: Lectures, laboratory exercises, seminar work on selected topics.

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	5	written exam	20
Practical work	15	oral exam	30
Preliminary exam(s)		
Seminar(s)	30		