

Title	Environmental Microbiology						
Code	ZDOI11						
Study Program	Postgraduate (doctoral) university study programme: Environment Protection and Nature Conservation						
Semester	3rd semester						
ECTS	5						
Status	<input type="checkbox"/> obligatory x elective						
Lecturer	Ines Petrić, PhD						
Co-Lecturers	-						
Requirements for Enrolment	Enrolled doctoral studies						
Objectives	Providing fundamental knowledge on microorganism and their functioning in natural habitat, microbial role in biogeochemical cycling as well as their catalytic activity in biotransformation of environmentally harmful/dangerous organic compounds, which makes the essence for the activities to be undertaken in the prevention or abatement of pollution.						
Learning Outcomes	<p>The goal of this course is to provide a framework for understanding ecological role of microbes in the environment.</p> <p>Objectives are to familiarize students with:</p> <ol style="list-style-type: none"> 1) the scope of the environmental microbiology 2) the fundamental role on microorganisms in the environment and different methods for studying microorganisms 3) the natural habitats in which microorganism live 4) the role of microorganisms in biogeochemical cycling 5) the biocatalytic activities of microorganisms in the transformation of organic compounds as well as their role and application in the prevention of environmental pollution 6) to write seminar paper on the given subject in the area of environmental microbiology 						
Connection between Learning Outcomes, Curricular and Student Activities	Student Activities	ECTS	Learning Outcomes	Curricular Activities	Methods of Assessment	Credits*	
						min	max
	Oral exam	50%	1-5	Testing understanding of the subject area	Oral exam		
	Seminar paper	50%	1-6	Review and understanding of the given literature and writing of the seminar paper	Grading seminar paper		
	Total	100%					
Consultations							
Learning Activities	Lectures		Seminars		Practice		
Hours	15						
Contents / Teaching Units	<ul style="list-style-type: none"> • Introduction to Environmental Microbiology. • Introduction to different microorganisms and techniques to study them • Microorganisms and their natural habitats. Microorganisms in freshwater and 						

	<p>marine environments. Microorganisms in soil and subsurface environments. Microorganisms in extreme environments.</p> <ul style="list-style-type: none"> • Physicochemical factors affecting the environmental fate of microorganisms. • Microbial interactions. • Role of microorganisms in biogeochemical cycling. • Microorganisms and organic pollutants. Biodegradation of recalcitrant compounds. Role of microorganisms in pollution abatement via bioremediation
Obligatory Literature	<p>Maier, R. M., Gerba, C. P. and Pepper, I. L. (eds.): Environmental Microbiology. Academic Press, Inc. 1999</p> <p>Varnam, A. H. and Evans, M. G. (eds.): Environmental Microbiology. Manson Publishing Ltd, London, 2000</p>
Recommended literature	<p>Bitton, G. (ed.): Wastewater Microbiology, 2nd Ed. John Wiley and Sons Inc. New York, 1999.</p> <p>Alexander, M.: Biodegradation and Bioremediation, 2nd ed. Academic Press, Inc. 1999.</p> <p>Rittmann, B.E. and McCarty P.L.: Environmental Biotechnology – Principles and Applications. The McGraw-Hill Companies, Inc. 2001</p>
Requirements for Aquiring Signature	Attending lectures or consultations, Seminar paper
Type of Exam	Oral exam. A seminar paper is required for this course.
Lectures Language	Croatian, english
Quality Monitoring	