

NAME OF THE COURSE		GENERAL MICROBIOLOGY				
Code	PMB518	Year of study	3.			
Course teacher	Assoc. Prof. Ana Maravić	Credits (ECTS)	5			
Associate teachers	Dr. Tomislav Rončević	Type of instruction (number of hours)	L	S	E	F
			45		45	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Students will get familiar with various microorganisms, their physiology, morphology, genetics, ecology, pathogenicity, their application in biotechnology and environmental protection, and the use of laboratory methods and techniques in microbiological research.					
Course enrolment requirements and entry competences required for the course	Course in Cell Biology taken and passed.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>After successfully mastering the course, students will be able to:</p> <ul style="list-style-type: none"> describe, connect and critically analyze basic scientific knowledge about different groups of microorganisms, including prokaryotic and eukaryotic microorganisms and viruses; explain the structure, diversity and replication of different groups of microorganisms; explain the basic genetic mechanisms of adaptation of prokaryotic microorganisms in different environmental conditions; analyze the relationship between growth and reproduction factors of microorganisms; apply basic skills and knowledge in isolation, analysis and identification of different groups of microorganisms; identify the pathogenic mechanisms of microorganisms that cause diseases in humans and animals as well as the mechanisms used by hosts to defend themselves against pathogens. 					
Course content broken down in detail by weekly class schedule (syllabus)	<ol style="list-style-type: none"> 1. Introduction. Historical development of microbiology. (1 hour) 2. Distribution of microorganisms and their role in biogeochemical processes in nature. (3 hours) 3. Eukaryotes, Archaea and Bacteria; structures and functions. Morphology, nomenclature and classification of microorganisms. (3 hours) 4. Basic structures and functions of prokaryotic cells. (3 hours) 5. Genetics of microorganisms, genome organization, mobile genetic elements. (4 hours) 6. Growth of microorganisms and basic growth factors; nutrients, temperature, oxygen, osmotic pressure and pH. (3 hours) 7. Metabolic activities of microorganisms. Identification of microorganisms using various physiological and biochemical tests. (3 hours) 8. Microorganisms and diseases; microorganism-host relationship, immune responses to infections. (4 hours) 9. Mechanisms of antimicrobial resistance to antibiotics and other chemicals. (4 hours) 10. Application of microorganisms in biotechnology. (3 hours) 11. Basic morphological characteristics and cycles of parasite development (2 hours) 					

	<p>12. The role of microorganisms in the biodegradation of heavy metals, nitrates and chlorinated hydrocarbons. Bioremediation. (3 hours)</p> <p>13. Morphological characteristics of viruses, viroids and prions. Virus classification and nomenclature. DNA viruses and RNA viruses. (3 hours).</p> <p>14. Procedures for studying the properties of viruses. Epidemiology of viral diseases. Viruses in the environment. (3 hours)</p> <p>15. Control and inhibition of growth of microorganisms by physical and chemical methods. (3 hours)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	Attendance at lectures in the amount of at least 70% of the scheduled hourly rate. All scheduled laboratory exercises performed.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1	Research		Practical training	
	Experimental work	1	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	1	Oral exam	1	(Other)	
	Written exam	1	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The final grade will be calculated according to the achieved percentage of points in the oral and written exam (70%) and laboratory exercises (30%). The evaluation of students' work will be based on the percentage of the achieved total number of points according to the following scale: <60% fail (1); 60-70% sufficient (2), 71-80% good (3), 81-90% very good (4), 91-100% excellent (5).					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	S. Duraković, S.Redžepović, Uvod u opću mikrobiologiju, Kugler, Zagreb, 2002.			5		
	S. Kalenić, E. Mlinarić-Missoni isur., Medicinska bakteriologija i mikologija, Merkur A.B.D., Zagreb, 2005.			5		
	Z. Brudnjak, Medicinska virologija, Merkur A.B.D., Zagreb, 2002.			5		
Optional literature (at the time of submission of study programme proposal)	<p>R.A. Harvey, P.C. Champe, B.D. Fisher, Microbiology, 2nd ed., Lippincott, Williams and Wilkins, Philadelphia, 2007.</p> <p>R.M. Patrick, S.R. Ken, A.P. Michael, Medical Microbiology, 5th ed., Elsevier/Mosby, Philadelphia, 2005.</p>					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> • Active participation in classes. • Anonymous students' surveys evaluating the teacher and the course. • Students' feedback during consultations. 					
Other (as the proposer wishes to add)						

