

NAME OF THE COURSE		Marine Microbiology				
Code	PPB255	Year of study	3			
Course teacher	Associate Professor Mirjana Skočibušić, PhD	Credits (ECTS)	2			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15		15	
Status of the course	Elective	Percentage of application of e-learning	20			
COURSE DESCRIPTION						
Course objectives	Learning the basic knowledge needed to understand the role of microorganisms (bacteria, archaea, viruses and eukaryotic microorganisms ) in marine ecosystems, the impact of physical and chemical characteristics of natural environments that interact with microbial life and influence its activities, distribution and biodiversity of the microbial communities in marine and marine ecosystems as a possible reservoir of pathogenic microorganisms . The impact of microorganisms on health, food/water sanitation. Special topics incorporated into the course will include current issues in marine environmental management and conservation.					
Course enrolment requirements and entry competences required for the course	General microbiology					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>1. Apply the modern microbiological methods for determining the number of microorganisms in the sample, biomass and activity of microorganisms.</li> <li>2. Determinate diversity and dynamics of microbe populations and communities in marine environments.</li> <li>3. Analysed the number of bacteria indicator of faecal contamination and compared with the level of pollution.</li> <li>4. Assess the risks of known and emerging pathogens in marine environments.</li> </ol>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures and exercises:</p> <ol style="list-style-type: none"> <li>1. Introduction to environmental microbiology. (2 hours)</li> <li>2. Autochthone microorganisms in marine ecosystems. (2 hours)</li> <li>3. Microorganisms and organic pollution of the sea. (2 hours)</li> <li>4. Collection and processing of samples of the sea and marine fauna. (1 hour)</li> <li>5. Microorganism indicators of faecal contamination of the marine environments. (2 hours)</li> <li>6. Marine borne pathogens. (1 hour)</li> <li>7. The home waste and wastewater management. (2 hours)</li> <li>8. Evaluation of the risk on health, food/water sanitation and marine environmental management and conservation (2 hours)</li> <li>9. Ballast water and their importance in the introduction of non-native species of microorganisms. (1 hour)</li> </ol>					
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 checked="" type="checkbox"/> partial e-learning		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input checked="" type="checkbox"/> work with mentor <input type="checkbox"/> (other)			

	<input type="checkbox"/> field work					
Student responsibilities	Regular attendance of all forms of teaching, active participation in class, write a seminar paper, oral presentation of seminar work from colleagues, regular colloquia (on lectures and exercises), written reports of experimental work.					
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	0.5	Research		Practical training	
	Experimental work	0.5	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project	1	(Other)	
Grading and evaluating student work in class and at the final exam	The final grade students will be based on the results achieved in the combination of lectures, seminars, laboratory exercises and project. The final assessment of the case will be calculated according to the results: 30% of the mid-term; Final exam 35 % ; Seminar 10 % ; Laboratory exercises 15 % and 10 % of the Project. The final grade is based on a percentage of the total number of points obtained using the following scale : < 60 % insufficient ; 60-69 % sufficient ( 2 ) , 70-79% solid ( 3 ) , 80-89% very good ( 4 ) , 90-100 % excellent ( 5 ) .					
Required literature (available in the library and via other media)	<b>Title</b>			<b>Number of copies in the library</b>	<b>Availability via other media</b>	
	N. Krstulović; M. Šolić. Mikrobiologija mora . Split : Institut za oceanografiju i ribarstvo, 2006.			5		
	R. M. Maier,I.L.Pepper & C.P.Gerba Environmental Microbiology ,R. (2010), Academic Press 1			1	e-portal	
	John P., Marine Microbiology, Academic. Press 2001.			1	e-portal	
Optional literature (at the time of submission of study programme proposal)	Marine Microbiology: Ecology and Applications (C. Munn, Garland Science, 2011) Microbial Ecology of the Oceans, 2nd ed. (Editor: D.L. Kirchman, John Wiley & Sons, 2008)					
Quality assurance methods that ensure the acquisition of exit competences	Taking attendance in class; The annual analysis of the performance of the examination; Student survey in order to evaluate teachers; Self-evaluation of teachers; Feedback from students who have already graduated from the relevance of the course content.					
Other (as the proposer wishes to add)						