

NAME OF THE COURSE		Invasive Marine Organisms				
Code	PPB261	Year of study	3			
Course teacher	Associate Professor Mirjana Skočibušić, PhD	Credits (ECTS)	2,0			
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	Determinate and analyze mechanisms of introducing new species in marine ecosystems, their adaptive abilities to new habitats, the transformation and reduction of biodiversity in marine ecosystems, as well as the consequences of species expansion for ecosystems, economics and human health.					
Course enrolment requirements and entry competences required for the course	None.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>Student will be able to:</p> <ol style="list-style-type: none"> Analyze the ecological, economic and social importance of invasive species in marine ecosystems. Explain the impact of different factors on activity, distribution of introduced species and their impact on the reduction of biodiversity in marine communities. Explain biological invasion, autochthonous and allochthonous species, invasive species, indigenous species, naturalized species, endemic, biogeographic regions. Analyze the mechanisms of biological invasion caused by human activity such as traffic, fisheries, aquariums, construction of channel and others. Identify the measures for control, prevention and destruction of invasive populations. investigate the database of foreign species. 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures and exercises:</p> <ol style="list-style-type: none"> The ecological, economic and social significance of invasive species in the sea ecosystems. (3 hours) Transmission of allochthonous species. Breeding of marine organisms in controlled conditions as a possible way for the introduction of new species. (2 hours) The impact of different factors on activity and distribution of invasive species and reducing biodiversity in marine communities. (2 hours) Comparative overview and features of natural and invasive species. (2 hours) Control measures, prevention and destruction of invasive populations. Restoration of indigenous species and habitats. (2 hours) Examples that cover occasional, cryptic, natural and invasive species (2 hours) Convention and prevention of dangerous transmissions marine organisms and pathogens by controlling ballast waters and sediments. EU regulations. (2 hours) 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" 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 of lectures and exercises.					
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	0,5	(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project	0,5	(Other)	
Grading and evaluating student work in class and at the final exam	Tests during semester and written and oral exams					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Carlton JT, GM Ruiz. 2004. The magnitude and consequences of bioinvasions in marine ecosystems: implications for conservation biology. In Marine Conservation Biology: The Science of Maintaining the Sea's Biodiversity, Elliott A. Norse and Larry B. Crowder Island Press, Washington.					web
	Galil BS, Gollasch S, Minchin D, Olenin S: Alien marine biota of Europe. In Handbook of Alien Species in Europe. Edited by: DAISIE. Dordrecht: Springer; 2009:93–104.					web
	Kühn I, Klotz S: Biological Invasions. Edited by: Nentwig W. Heidelberg: Springer; 2007.					web
	Carlton JT, GM Ruiz. 2004. The magnitude and consequences of bioinvasions in marine ecosystems: implications for conservation biology. In Marine Conservation Biology: The Science of Maintaining the Sea's Biodiversity, Elliott A. Norse and Larry B. Crowder Island Press, Washington.					
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	Students surveys and consultation.					

Other (as the proposer wishes to add)	
---------------------------------------	--