<table>
<tr><td colspan="2">NAME OF THE COURSE</td><td colspan="5">Biological invasion</td></tr>
<tr><td>Code</td><td>PMB534</td><td>Year of study</td><td colspan="4">2</td></tr>
<tr><td>Course teacher</td><td>Assistant Professor Sanja Puljas, PhD
Associate Professor Mirko Ruščić, PhD</td><td>Credits (ECTS)</td><td colspan="4">2</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td>F</td></tr>
<tr><td>15</td><td></td><td></td><td></td></tr>
<tr><td>Status of the course</td><td>Elective</td><td>Percentage of application of e-learning</td><td colspan="4">10</td></tr>
<tr><td colspan="6">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="5">The aim of the course is to get acquainted with invasive plant and animal species in Croatia and Europe and the ways of their introduction and spread. Students will be introduced to the mechanism of biological invasions, the impact on biodiversity loss, the detrimental effect on human health and the negative economic impact. The aim is to understand the methods of control, prevention of spread and removal of invasive species. Students will be introduced to the applicable laws and regulations relating to invasive species in Croatia and Europe.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="5">There are no entry competences.</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="5">Student will be able to:
-Understand the issues of invasive species at the national, regional and global level,
-recognize invasive species in Croatia and Europe,
-state the causes and ways of introduction and spread of invasive species,
-explain methods of risk assessment of invasive species,
-critically assess projects related to combating invasive species,
-understand the ecological, economic and health impact of invasive species,
-understand the legislation related to invasive species,
-critically discuss methods of controlling invasive species.</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="5"><u>Lecture 1 and 2. History of biological invasion and why we deal with it</u>
World examples of invasion of organisms and consequences of their spread.
<u>Lecture 3. Terminology of biological invasion</u>
Biological invasion, indigenous and non-indigenous species, invasive species, domesticated species, naturalized species, endemic, biogeographical regions.
<u>Lecture 4. The process of biological invasion</u>
Ecology of invasive species, life cycles of invasive species, adaptations to new habitats, resistance of the ecological system to invasions.
<u>Lecture 5. Routes of entry and mechanisms of spread of invasive species</u>
Intentional and unintentional human action, blind travelers, colonization, pest extermination, ballast water, recreation (hunting, fishing, tourism, horticulture, pets). Habitat changes (opening of the Suez and Panama Canals).
<u>Lecture 6. Prevention and control of biological invasion</u>
Control of invasive species, their removal and prevention of risk assessments of invasive species, databases on alien species, projects / institutions dealing with alien species.
<u>Lecture7.i 8. Examples of biological invasions</u>
Black list of invasive species of Europe, invasive species of vascular plants of Europe, invasive species of terrestrial invertebrates and invertebrates and fish in buried European waters, invasive marine species of Europe, invasive species of mammals, birds, amphibians and reptiles in the fauna of Europe.
<u>Lecture 9. and 10. Biological invasion in Croatia</u></td></tr>
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	Network http://www.invazivnevrste.hr/, list of invasive alien species of concern in the EU, list of invasive species in Croatia and assessment of their invasiveness. Lecture 11. Allochthonous benthic organisms in the Adriatic Sea Lecture 12. Influences of invasive species Environmental, economic and health impact. Lecture 13. Legislation related to invasive species Strategies for dealing with invasive alien species, Berne Convention, IUCN SSC Invasive Alien Species Expert Groups: Codes of Conduct and Guidelines. Lecture 14 and 15. Guest lecturers dealing with the issue of invasive species

Format of instruction	☒ lectures ☐ seminars and workshops ☐ exercises ☐ *on line* in entirety ☒ partial e-learning ☐ field work	☐ independent assignments ☒ multimedia ☐ laboratory ☐ work with mentor ☐ (other)
Student responsibilities	Students' presence in the amount of at least 70% of scheduled lectures, student seminar 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	1	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1	Project		(Other)	

Grading and evaluating student work in class and at the final exam	The final grade is the sum of the points on the written exam in the exam period.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Ciesm Atlas Of Exotic Species		http://www.ciesm.org/
	Global Invasive Species Database		http://www.issg.org/
	UREDBA (EU) br. 1143/2014 EUROPSKOG PARLAMENTA I VIJEĆA (2014) o sprječavanju i upravljanju unošenja i širenja invazivnih stranih vrsta		web
	LIFE and Invasive Alien Species, LIFE Publication		
	Delivering Alien Invasive Species Inventories for Europe www.europe-aliens.org		http://www.europe-aliens.org/
	Andrew N. Cohen. Invasions in the sea, Park Science 22(2), 2004.		

Optional literature (at the time of submission of study	Caulerpa www.izor.hr/kaulerpa The Ecology of Invasions by Animals and Plants. Charles S. Elton

programme proposal)	Aquatic Invasions in the Black, Caspian, and Mediterranean Seas (NATO Science Series: IV: Earth and EnvironmentalSciences) Natural Enemies: An Introduction to Biological Control. Ann E. Hajek Encyclopedia of Biological Invasions (Encyclopedias of the Natural World). Daniel Simberloff and Marcel Rejmanek
Quality assurance methods that ensure the acquisition of exit competences	-Taking attendance of students during classes. -Students' survey evaluation of teacher's work. -Feedback from graduated students on the relevance of the course content.
Other (as the proposer wishes to add)	Consultations are taking place according to the agreement with the students or by e-mail: spuljas@pmfst.hr and mrus@pmfst.hr