Syllabus

Department	Department of Ecology, Agronomy and Aquaculture							**Year**		2023./24.	
Course	UNIZD Marine Research Living Lab							**ECTS**		**3**	
Study programme	Underwater science and technology										
Level of study programme	☒ Undergraduate		☐ Graduate		☐ Integrated			☐ Postgraduate			
Type of study programme	☒ Single major ☐ Double major		☒ University		☐ Professional			☐ Specialized			
Year of study	☐ 1		☒ 2		☐ 3		☐ 4		☐ 5		
Semester	☐ Winter ☒ Summer		☐ I		☐ II	☐ III	☒ IV		☐ V		
			☐ VI		☐ VII	☐ VIII	☐ IX		☐ X		
Status of the course	☐ Compulsory		☒ Elective		☐ Elective course offered to students from other departments		**Teaching Competencies**		☐ YES ☒ NO		
Workload	**10**	**L**	**0**	**S**	**30**	**E**	**Internet sources for e-learning**			☒ YES ☐ NO	
Location and time of instruction	University of Zadar, online lectures, fieldwork in the area of the middle Adriatic; from May to September.						**Language(s) in which the course is taught**		English		
Course start date	May 1st						**Course end date**		September 30th		
Enrolment requirements	Basic knowledge of marine biology.										
Course coordinator	Bruna Petani										
E-mail	bpetani@unizd.hr						**Consultation hours**		Wednesday, from 11 a.m. to 12 a.m.		
Course instructor	Ivan Župan, Bosiljka Mustać, Slavica Čolak, Melita Mokos, Tomislav Šarić, Ivana Zubak Čižmek										
E-mail	zupan@unizd.hr; bpetani@unizd.hr; bmustac@unizd.hr; scolak21@unizd.hr; mmokos@unizd.hr; izubak@unizd.hr						**Consultation hours**				
Assistant/ Associate											
E-mail							**Consultation hours**				
Assistant/ Associate											
E-mail							**Consultation hours**				
Mode of teaching	☒ Lectures		☐ Seminars and workshops		☐ Exercises		☒ E-learning		☒ Field work		
	☐ Individual assignments		☐ Multimedia and network		☒ Laboratory		☐ Mentoring		☐ Other		

Learning outcomes	Upon completion of the course, students will be able to: - apply acquired knowledge to conduct basic field research in marine ecosystems; - analyse problems and dangers for the marine environment based on knowledge of biological processes and organisms; - collect and partially analyse field research data; - valorise the social and ethical responsibility of the individual in the protection of the marine environment; - propose ways to prevent pollution of the marine environment and procedures for repairing the damage; - have the ability to integrate knowledge from different fields of science to devise solutions for the challenges faced by marine ecosystems in the Adriatic; - understand ocean sustainability issues, focusing on SDG14 (Life Below Water): Conserve and sustainably use the oceans, seas and marine resources for sustainable development; - present the collected and processed data, create conclusions based on them, and present them to a professional audience; - communicate about the ocean in a meaningful way, and make conscious decisions regarding the ocean.
Learning outcomes at the Programme level	Upon completion of the course, students will be able to: - analyse problems and environmental hazards based on knowledge of biological processes and organisms - propose ways to prevent pollution of the freshwater and marine environment and procedures for remediating the damage - apply scientific methods when solving problems - present research results understandably and concisely in oral and written form - establish and maintain a relationship of cooperation, communication and compromise during the project

Assessment criteria	☐ Class attendance	☐ Preparation for class	☐ Homework	☐ Continuous evaluation	☒ Research
	☒ Practical work	☐ Experimental work	☒ Presentation	☐ Project	☐ Seminar
	☒ Test(s)	☐ Written exam	☐ Oral exam	☐ Other:	
Conditions for permission to take the exam	/				
Exam periods	☐ Winter		☐ Summer	☒ Autumn	
Exam dates				6th and 20th of September	
Course description	Description of the virtual part of the program: The virtual part of the program will be held in May and June and consist of five lectures lasting two school hours each. Through the lectures, participants will learn about the basic methods used in field research of marine ecosystems. All lectures will emphasise the impact of the challenges on the Adriatic Sea and the possibility of applying the acquired knowledge to other marine areas with different ecological conditions that face similar challenges and threats. After the lectures, the students will take the online exam. Passing the exam is required to attend the program's practical part. Description of the physical part of the program:				

<table>
<tr><td></td><td>The physical part of the program will be held in September for 5 days with 6 hours of activity. Before the start of the physical part of the program, students will be divided into groups composed of students and teachers/mentors from different institutions. Students, accompanied by a teacher, will spend the first three days conducting various field studies of marine ecosystems to determine the types and intensities of the challenges that marine ecosystems face. On the fourth day of the physical part of the program, students, together with their mentors, will analyse the collected data to identify the various challenges marine ecosystems face and devise possible solutions for mitigation and adaptation to the challenges mentioned above.
The fifth day of the physical part of the program will be reserved for presenting the results of the field research that each research group has collected and for delivering the designed solutions.</td></tr>
<tr><td>Course content</td><td>Content of the virtual part of the course:
1. climate change and invasive species and their interactions with indigenous communities.
2. sea pollution with an emphasis on plastic and heavy metals;
3. food production in the sea and the effect on the environment;
4. the importance of marine ecosystems and the services they provide.

During the physical part of the program, students will:
1. carry out physical and chemical analyses of seawater at different locations, under the guidance of the teachers involved in the implementation of the program,;
2. use various technical solutions (recording with underwater drones, SCUBA diving) and different methods (CARLIT method, visual census method) to monitor the status and structure of different marine communities;
3. collect and analyse washed-up litter ;
4. analyse the data gathered to determine the various difficulties that marine ecosystems encounter and develop potential remedies for mitigating and overcoming the aforementioned difficulties.
5. present the results of the field research that each research group has performed and the designed solutions.</td></tr>
<tr><td>Required reading</td><td>P. Castro, M.E. Huber (2019) Marine Biology, 11th Edition. McGraw Hill</td></tr>
<tr><td>Additional reading</td><td></td></tr>
<tr><td>Internet sources</td><td></td></tr>
<tr><td rowspan="3">Assessment criteria of learning outcomes</td><td colspan="5">Final exam only</td><td></td></tr>
<tr><td colspan="2">☐ Final written exam</td><td colspan="2">☐ Final oral exam</td><td>☐ Final written and oral exam</td><td>☒ Practical work and final exam</td></tr>
<tr><td>☐ Only test/homework</td><td>☐ Test/homework and final exam</td><td>☐ Seminar paper</td><td>☐ Seminar paper and final exam</td><td>☐ Practical work</td><td>☐ other forms</td></tr>
<tr><td>Calculation of final grade</td><td colspan="6">50% test, 50% practical work</td></tr>
<tr><td rowspan="5">Grading scale</td><td>0 - 60</td><td colspan="5">% Failure (1)</td></tr>
<tr><td>61 - 70</td><td colspan="5">% Satisfactory (2)</td></tr>
<tr><td>71 -80</td><td colspan="5">% Good (3)</td></tr>
<tr><td>81 - 90</td><td colspan="5">% Very good (4)</td></tr>
<tr><td>91 - 100</td><td colspan="5">% Excellent (5)</td></tr>
<tr><td>Course evaluation procedures</td><td colspan="6">☒ Student evaluations conducted by the University
☐ Student evaluations conducted by the Department
☐ Internal evaluation of teaching</td></tr>
</table>

	☒ Department meetings discussing quality of teaching and results of student evaluations ☐ Other
Note /Other	In accordance with Art. 6 of the *Code of Ethics* of the Committee for Ethics in Science and Higher Education, "the student is expected to fulfil his/her obligations honestly and ethically, to pursue academic excellence, to be civilized, respectful and free from prejudice." According to Art. 14 of the University of Zadar's *Code of Ethics*, students are expected to "fulfil their responsibilities responsibly and conscientiously. [...] Students are obligated to safeguard the reputation and dignity of all members of the university community and the University of Zadar as a whole, to promote moral and academic values and principles. [...] Any act constituting a violation of academic honesty is ethically prohibited. This includes, but is not limited to: - various forms of fraud such as the use or possession of books, notes, data, electronic gadgets or other aids during examinations, except when permitted; -various forms of forgery such as the use or possession of unauthorised materials during the exam; impersonation and attendance at exams on behalf of other students; fraudulent study documents; forgery of signatures and grades; falsifying exam results." All forms of unethical behaviour will result in a negative grade in the course without the possibility of compensation or repair. In case of serious violations the *Rulebook on Disciplinary Responsibility of Students at the University of Zadar* will be applied. In electronic communications only messages coming from known addresses with a first and a last name, and which are written in the Croatian or English standard and appropriate academic style, will be responded to.