NAME OF THE COURSE	Managing of Sea and Sea protected					
Code	PPB 316	Year of study	3			
Course teacher	Professor Mate Šantić, PhD	Credits (ECTS)	2			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30			
Status of the course	Elective	Percentage of application of e-learning	10%			

COURSE DESCRIPTION	
Course objectives	Students will be adopt basic knowledge and concept to understand importance of biological riches of sea in food production. Also student will be adopt knowledge of various factors that effect on utilize sea organism as well as on long-term sustainable managing. Also describe mode and methods of protected marine ecosystem.
Course enrolment requirements and entry competences required for the course	No conditions
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	Students will be able to: 1. Understand responsible utilize biological supply of sea. 2. Explain basic principle of regular managing of marine resources. Adopt principles of sustainable development. 3. Analysis basic mode of fisheries and fishery implements. 4. Recognize various method to protect marine areas. 5. Understand influence of invading organisms form marine life in the Adriatic
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: / Exercises: 1. Biological richness of sea. Importance of marine biological richness in food production Influence of abiotic factors. Marine ecosystem. Abiotic factors in marine environment. Biological importance of horizontal and vertical streams (upwelling and downwelling). (2 h) 2. Influence of biotic factors. Trophic level in marine ecosystem. Phytoplankton. Zooplankton, top-predators. (2 h) 3. Food nets and ecological pyramids in marine ecosystem. Energy flow and material circulation in marine ecosystem. Ecological efficiency in marine ecosystem. (2 h) 4. Areas in marine ecosystem and fishery. Biological community in marine ecosystem. Pelagic and benthos. (2 h) 5. Managing of marine richness -basic method of regular managing of marine resources. Factors which influence in marine fisheries (nature, economic, social) Changes in fish population (Russel low). (2h) 6. Dynamics of utilize and no-utilize population. Fishery regulation. Fish population stock. Regular manage. Acts of regular managing. Graham-Sheffer diagram. (2 h) 7. Regulation of fisheries. Strategy of catches. MSY (Maximum Sustainable Yield), MEY (Maximum Economic Yield) and OSY (Optimal Sustainable Yield) strategy(2h). 8. Targets of regular managing. Overhunting. Fisheries effort and Selectivity of fishery-tool. Economic fisheries. (2 h)

	9. Fisheries and fishery-tools used in the Adriatic Sea. Coastal, demersal and pelagic fisheries. Mariculture. (2 h) 10. Influence of climate changes. Influence of sea warming for Adriatic Sea. Appearance of thermophile species. (2 h) 11. Protected marine ecosystem. Antropogenic influence on marine ecosystem. Contaminate of sea (biological, physical and chemistry factors). Influence of inorganic and organic matters. Influence of heavy metals and pesticides. (2 h) 12. Protected of marine ecosystem. Concept of PSSA (Particularly Sensitive Sea Areas). (2 h) 13. Reason of sea protected. Maritime accident – influence for marine ecosystem. Selectivity and degree for protect particularly sensitive areas. (2 h) 14. Managing of protect areas. Adriatic Sea – criteria for proclaim of Particularly Sensitive Sea Areas. (2 h) 15. Monitoring of environment (sea monitoring). Protected areas in the world. Mode and methods of Adriatic Sea protect. (2 h)
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	Attending of lecture, minimal 70%.

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	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam	1.0	(Other)	
	Written exam		Project		(Other)	

Grading and evaluating student work in class and at the final exam	During the semester – 2 obligatory tests. On finally exam, students will be evaluated on the basis of oral exam.

Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	Gubbay S. (1999): Marine protected areas. Principles and tehniques for menagment. Chapman and Hall, London		Web material
	Cognetti 1992. Inquinamenti e protezione del mare. Caledrini, Bologna-Milano.		Web material

Optional literature (at the time of submission of study programme proposal)	Karleskint G. (1998): Introduction to marine biology. Saunders College Publishing. Levinton JS. (1995): Marine Biology. Oxford University press.

Quality assurance methods that ensure the acquisition of exit competences	Active participation in course, personal cosultation
Other (as the proposer wishes to add)	