NAME OF THE COURSE	Climate System					
Code	PMP169	Year of study	2			
Course teacher	Darko Koračin, PhD, Full Professor	Credits (ECTS)	6			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			35		30	
Status of the course	Compulsory	Percentage of application of e-learning	30			

COURSE DESCRIPTION

Course objectives	Provide knowledge on: - components of natural and anthropogenic causes of climate change - greenhouse gases and radiation processes - observations of climate change parameters - evaluation of climate models in historical periods - modeling of climate parameters in future periods
Course enrolment requirements and entry competences required for the course	- Meteorology 1 - Ocean Physics 1 - Introduction to Data Analysis - Meteorology 2 - Ocean Physics 2
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	- understanding of climate and paleoclimatic dynamics - understanding the causes of climate change - understanding short-term and long-term climate fluctuations by weather and climate characteristics - knowledge of theoretical and practical applications of climate models - expertise in methods of mitigating the effects of climate change on human beings activities and environment
Course content broken down in detail by weekly class schedule (syllabus)	1. Natural and anthropogenic causes of climate change (2 hours of lectures) 2. Basic concepts of paleoclimatology (2 hours of lectures) 3. Observations of climate change (2 hours of lectures) 4. Energy balance at the earth surface and atmosphere (3 hours of lectures) 5. Ocean influence on climate (2 hours of lectures) 6. Hydrological cycle (2 hours of lectures) 7. Greenhouse gases (2 hours of lectures) 8. Aerosols and radiation processes (2 hours of lectures) 9. Short-term climate variabilities (El Nino, La Nina, Pacific decadal oscillation, North Atlantic oscillation, Madden-Julian oscillation) (4 hours of lectures) 10. Basic structure of climate models (3 hours of lectures) 11. Applications of global and regional climate models (3 hours of lectures) 12. Uncertanties and errors of climate models (2 hours of lectures) 13. Projections of future climate by climate models (3 hours of lectures) 14. Application of climate models to the local region (1 hour of lectures) 14. Mitigation of climate change effects (2 hours of lectures)
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	Attend at least 70% of lectures and 70% of exercises.

Screening student work *(name the*	Class attendance	1	Research		Practical training	

proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Experimental work		Report		(Other)	
	Essay		Seminar essay	1	(Other)	
	Tests		Oral exam	3	(Other)	
	Written exam		Project	1	(Other)	

Grading and evaluating student work in class and at the final exam	The grade is determined on the basis of: - oral presentations - domestic works		
Required literature (available in the library and via other media)	**Title**	**Number of copies in the library**	**Availability via other media**
	J. David Neelin **Climate Change and Climate Modelling** Cambridge University Press, 2011.	1	yes
	Egbert Boeker & Rienk van Grondalle **Environmental Physics: Sustainable energy and climate change** Wiley, 2011	1	yes
Optional literature (at the time of submission of study programme proposal)	Intergovernmental Panel on Climate Change **Third Assessment Report of the International Panel on Climate Change. Volumes** Cambridge University Press, 2001.		
Quality assurance methods that ensure the acquisition of exit competences	Exam results statistics and student evaluation through an anonymous survey at the end of the course. The survey is conducted according to the regulations of the University of Split.		
Other (as the proposer wishes to add)			