

NAME OF THE COURSE		Energy and environment				
Code	PMT175	Year of study	2. year graduate study			
Course teacher	Doc.dr.sc. Vladimir Pleština	Credits (ECTS)	2			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15	15		
Status of the course	Elective course	Percentage of application of e-learning	30%			
COURSE DESCRIPTION						
Course objectives	Adopt basic knowledge of energetics with emphasis on the impact on the environment.					
Course enrolment requirements and entry competences required for the course	Course enrolment requirements: none.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>After this course, students will be able to:</p> <ul style="list-style-type: none"> - Represent and provide arguments to defend position on the impact of energy on the environment - Distinguish transformation in Electric Power Systems - Evaluate the impact of energy sector development in contribution to the environment - Evaluate and argument the impact of climate change on energy and environment relationship - Explain the global environmental issues - Explain the Sustainable Energy Management 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Week 1 Introduction. Introducing students to the rules, literature and teaching plan. Explaining the course content. Introduction to energetics and environmental impacts.</p> <p>Week 2 The law of conservation of energy states, forms of energy, primary, transformed and useful forms of energy. Sustainable energy development and evaluation of sustainable development of energy systems.</p> <p>Week 3 The entropy from the world point of view. Energy yesterday, today, tomorrow. History of energy use. World and energy. Sustainable energy development and sustainability of the energy system. Methods for assessment the sustainable development of energy systems: External cost, multicriteria analysis, exergy, energy.</p> <p>Week 4 Prognosis of energy development. Projections for the development of the energy sector in the world and Croatia.</p> <p>Week 5 Features of energy sources, impact on the environment, emissions in the energy and climate change</p> <p>Week 6 Conversions to electric power. The ability of electrical energy conservation.</p> <p>Week 7 Primary and transformed energy forms supply process. The share of energy in the cost of products. Waste Heat and assessment of their energy potential</p>					

	<p>Week 8 1st colloquium</p> <p>Week 9 Climate change and the possibility of an impact on them.</p> <p>Week 10 Energy system development planning. Proposing measures to increase energy efficiency and selection of available technology in accordance with the defined objectives and the level of planned investment.</p> <p>Week 11 Energy markets</p> <p>Week 12 Global environmental problems</p> <p>Week 13 Substitution sources: renewable and non-renewable sources, availability, technical applicability, effectiveness, substitution criteria, the application of cogeneration. Examples of energy structure optimization in the energy-intensive processes (production of chemicals, paper, plastics, wood, metallurgy, etc.)</p> <p>Week 14 Sustainable energy management on a global scale: The Kyoto Protocol, a network of industrial energy efficiency, green and white certificates.</p> <p>Week 15 2nd colloquium and student paper presentations.</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> robot demonstration (other)		
Student responsibilities	Class attendance Independent planning and presentation of student paper Active participation in the teaching process Exam.					
Screening student work (<i>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</i>)	Class attendance	0,5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay	0,5	Seminar essay	0,5	(Other)	
	Tests	0,5	Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	Total scoring (100%): Exam or 2 colloquiums - 90%, student paper 10% 1. Colloquium 1: 45% (or exam) 2. Colloquium 2: 45% (or exam) 3. Student paper: 10% (obligatory) Rating by percentage: 50% to 62% - sufficient (2) 63% to 75% - good (3) 76% to 88% - very good (4)					

	89% to 100% - excellent (5)		
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Predavanja – energetika i okoliš - online		
	B. Udovičić, Energetika, Školska Knjiga, Zagreb, 1993.		
Optional literature (at the time of submission of study programme proposal)	1. D. Foretić i ostali, Elektrane i okoliš, Element, Zagreb, 2000. 2. Renewable Energy, edited by Godfrey Boyle, Oxford University Press, 2004. 3. UNDP Environmental Governance Sourcebook, Regional Bureau for Europe, 2003 4. Internet		
Quality assurance methods that ensure the acquisition of exit competences	Conversation with the students. Students opinions about the quality of teaching through anonymous polls. The success of students at exam. Self-evaluation.		
Other (as the proposer wishes to add)			