

NAME OF THE COURSE		Renewable Energy Sources				
Code	PMT179	Year of study	2. (graduate)			
Course teacher	Ph. D. Sc. Vedran Boras	Credits (ECTS)	2,0			
Associate teachers	-	Type of instruction (number of hours)	L	S	E	F
			15	15		
Status of the course	optional	Percentage of application of e-learning	30%			
COURSE DESCRIPTION						
Course objectives	<p>Enabling students to:</p> <ul style="list-style-type: none"> <li>- Acquisition of basic knowledge in the field of renewable energy sources (their importance, potentials and limitations, advantages and disadvantages),</li> <li>- The permanent adoption and deepening of knowledge in the field of renewable energy,</li> <li>- Understanding of modern technologies for the exploitation of renewable energy sources,</li> <li>- Simple calculations of components and systems for exploitation of renewable energy sources.</li> </ul>					
Course enrolment requirements and entry competences required for the course	There are no requirements for course enrolment.					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>Students will be able to after successfully mastering the subject:</p> <ol style="list-style-type: none"> <li>1. define and describe the various renewable energy sources (RES),</li> <li>2. explain the need for renewable energy sources (RES) and critically assess their strengths and weaknesses,</li> <li>3. sketch simple RES systems,</li> <li>4. Apply the acquired knowledge in other courses as well as in future teaching practice.</li> </ol>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Week 1: Lecture (2 hours): Introductory lecture. Introducing students to the rules, literature and teaching assignments. Getting to know with the content of the course. Introduction, definitions, problems with the current energy system, possible solutions. Energy statistics.</p> <p>Week 2: Lecture (1 hour): Solar energy and technology for its use; solar thermal systems. Seminar (1 hour): Distribution of seminar papers to students.</p> <p>Week 3: Lecture (2 hours): Solar energy and technology for its use; solar power plants and photovoltaic systems.</p> <p>Week 4: Lecture (2 hours): Wind energy; wind turbines.</p> <p>Week 5: Lecture (2 hours): Hydropower; hydroelectric power plants, water turbines.</p> <p>Week 6: Lecture (2 hours): Tidal power, energy of ocean currents, sea waves energy, geothermal energy and technology for its exploitation.</p> <p>Week 7: Lecture (2 hours): Biomass energy.</p> <p>Week 8: Lecture (2 hours): Hydrogen Energy Technologies</p> <p>Week 9:</p>					

	Seminar (2 hours): Presentation of seminar papers. Week 10: Seminar (2 hours): Presentation of seminar papers. Week 11: Seminar (2 hours): Presentation of seminar papers. Week 12: Seminar (2 hours): Presentation of seminar papers. Week 13: Seminar (2 hours): Presentation of seminar papers. Week 14: Seminar (2 hours): Presentation of seminar papers. 15th week: Seminar (2 hours): The future of renewable energy sources, conclusions.					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input checked="" type="checkbox"/> <i>on line</i> in entirety <input checked="" type="checkbox"/> partial e-learning <input checked="" type="checkbox"/> field work			<input checked="" type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input checked="" type="checkbox"/> work with mentor <input type="checkbox"/> consultations (other)		
Student responsibilities	Active participation in lectures. Independent preparation and presentation of the seminar. Active participation in the teaching process.					
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	1	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1	(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	The exam or checking of acquired competences will be done through seminars. Each student or group of students will receive two tasks / themes that they need to be processed in two seminars and present them to the teacher and their colleagues.					
Required literature (available in the library and via other media)	<b>Title</b>			<b>Number of copies in the library</b>	<b>Availability via other media</b>	
	1. Online lectures about renewable Energy sources,					
	2. B. Labudović, Obnovljivi izvori energije, Energetika marketing, Zagreb, 2002.			-		
Optional literature (at the time of submission of study programme proposal)	1. A. Azapagic, R. Clift, Sustainable Development in Practice, John Wiley & Sons, NY, 2004, 2. V. Knapp, Novi izvori energije, Školska knjiga, Zagreb, 1993, 3. V. Paar, Energetska kriza: gdje (ni)je izlaz?, Školska knjiga, Zagreb, 1984, 4. Godfrey Boyle, Renewable Energy, Oxford Univesity Press, 2004, 5. Internet.					
Quality assurance methods that ensure the	- Taking attendance at lectures; - The annual analysis of the success of the examination;					

acquisition of exit competences	<ul style="list-style-type: none"><li>- Student survey in order to evaluate teachers;</li><li>- Feedback from students who have already graduated from the relevance of the course content,</li><li>- Self-evaluation.</li></ul>
Other (as the proposer wishes to add)	-