

<b>Study program:</b> Environmental Protection			
<b>Course title:</b> Alternative Energy Sources			
<b>Professor/assistant:</b> Anica Milošević / Jelena Bijeljić			
<b>Type of course:</b> compulsory			
<b>ECTS credits:</b> 6			
<b>Pre-requisites:</b> -			
<b>Aims of the course:</b> Prepare students to: adopt concepts such as solar energy, geothermal energy, wind energy, biomass energy, small water flows, etc., learn how to obtain energy from alternative energy sources, recognize restrictions on the use of alternative energy sources.			
<b>Learning outcomes:</b> Student will be able to: apply knowledge that enables them to perceive technical, economic and political aspects of using alternative energy sources, apply legal regulations related to the use of alternative energy sources.			
<b>Syllabus</b>			
<u>Theoretical part</u> Energy, economics and ecology (general part). Solar energy: resources, solar technologies, solar systems, use of thermal energy of the ocean. Wind energy: resources, wind power, wind machines, wind-based systems, technical problems and solutions. Hydro-energy: resources, utilization of water power, estimation of available energy, small hydropower plants, use of wave energy. Geothermal energy: types of geothermal resources, technologies and systems for exploiting them, consequences on the environment. Biomass: Biomass characteristics, technologies and systems for the use of biomass, biofuels. Nuclear energy: the processes of obtaining nuclear energy, nuclear fuel. New technologies (fuel cells, compressed hydrogen ...). Energy storage: general part, hydropower accumulation, electrochemical storage of energy (batteries), electrolysis process, accumulated energy of compressed hydrogen ...			
<u>Practical part</u> Students work on a free –topic-project in the field of alternative energy sources. This project task can be in the form of a report, a computer model, a laboratory experiment, or a mathematical model, and is to be presented.			
<b>Literature</b>			
<ol style="list-style-type: none"> <li>1. S. Tomovic, <i>Alternative Energy Sources</i>, Technical book, 2002.</li> <li>2. M.Radaković, <i>Renewable Energy Sources and Their Economic Evaluation</i>, AGM Book, 2010.</li> <li>3. M.Lambić, <i>Solar Heating</i>, 2002.</li> <li>4. M.Radaković, <i>Geothermal Energy</i>, AGM Book, 2011.</li> <li>5. M.Radaković, <i>Biodiesel-Biogas-Biomass</i>, AGM Book, 2009.</li> </ol>			
<b>Number of active classes</b>			Other forms of teaching:
Lectures: 2	Practical classes: 2	Research work:	
<b>Teaching methods</b> Combination of interactive approach with practical problem solving.			
<b>Grading system</b> (maximum 100 points), <b>grading scale</b> from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
<b>Pre-exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
activity during theoretical lectures	<b>10</b>	written exam	<b>40</b>
practical training	-	oral exam	-
colloquium(s)/study research work	<b>40/10</b>		
<b>Sum</b>	<b>60</b>	<b>Sum</b>	<b>40</b>