

Study program / course: Mechanical engineering				
Type and level of study: Master academic studies				
Course: Renewable energy 1				
Lecturers: Lukic S. Nebojsa, Ph.D., Despotovic Z. Milan, Ph.D., Sustersic M. Vanja, Ph.D.				
Status of course: Obligatory for module M₄, II semester				
Number of ECTS:6				
Precondition: none				
The objective of course The primary objective of the course is that students familiarize themselves with renewable energy, and above all, solar, biomass and geothermal energies. Students should be familiarized with the basic aspects of using the solar energy, the biomass energy and the geothermal energy, in terms of receiving heat and/or electricity.				
The outcome of course After finishing this course, students will be able to, individually or using the teamwork, involve themselves in solving concrete problems and issues that pertain to use of solar, biomass and geothermal energies.				
Syllabus Theoretical study Solar energy: basic principles, solar radiation, greenhouse effect, the basic aspects of using solar energy, solar collectors, photovoltaic cells, hybrid solar collectors, biomass energy. The basic terms and classification. Thermo-chemical energy conversion of solid biomass, the combustion process, gasification, pyrolysis, anaerobic digestion, plants for production of biogas, biofuels, biodiesel. Geothermal energy. Basic types of geothermal systems and sources. Heat pumps. Techniques of exploitation. Geological and hydrological conditions. Drilling techniques. Aspect of the protection of life environment. Existing regulations relating to this type of renewable energy.				
Practical Studies: Doing tasks, doing projects from the mentioned field, laboratory practice: solar collectors, solar systems, etc.				
Recommended reading N. Lukic, M. Babic: Solar energy - monograph, (in Serbian), FME Kragujevac, 2008 Despotović M., M. Babic: Biomass energy - monograph, (in Serbian), FME Kragujevac, 2007 Šušteršič V., M. Babic: Geothermal energy - monograph (in preparation, in Serbian), FME Kragujevac, 2008				
The number of hours of active teaching:				Other classes: 1
Theory: 2	Practical classes: 1,6	Other forms of teaching: 0,4	Research study:	
Methods of teaching Lectures, multimedia, laboratory work				
Evaluation of knowledge				
Pre-final exam obligations	points	Final exam	points	
Activities during the classes:	10	Final exam	30	
Practical classes:	15			
Colloquiums(s) :	45			
Seminar(s) :	-			