

Study program: Civil Engineering			
Course: Energy Efficiency in Building			
Professor/assistant: PhD Tomić A. Mladen / Nemanja Petrović			
Status of course: compulsory			
ECTS credits: 5			
Pre-requisites: none			
Aims of the course: The main aim of the course is to prepare a student to: <ul style="list-style-type: none"> - understand the basics of the transfer of heat and matter in buildings; - understand the basics of energy performance of a building; - successfully identify the problems of energy efficiency in facilities; - be able to independently design energy efficient facilities and perform energy certification of a facility. 			
Learning outcomes: After successfully finishing the course, a student is able to: <ul style="list-style-type: none"> - prepare the energy balance of the building independently; - check the facility for the occurrence of condensation; - make an elaborate on energy efficiency and make an energy passport of the building independently; - propose measures for improving the energy class of a facility; - determine the annual emission of the CO₂ in facility. 			
Syllabus: <i>Theoretical part</i> Legislation in the area of EE in buildings. Experience of European countries. Fundamentals of thermodynamics. Heat transfer, heat conducting and passing the heat. Own and solar energy gains. Methodology for calculating the required energy for heating and cooling. Basics of the transfer of matter. Diffusion of water vapor. Checking the facility for the occurrence of condensation. <i>Practical part</i> Examples of budget for characteristic facilities. An example of making the Energy Efficiency Study for a characteristic facility. An example of creating energy efficiency passport of a characteristic new or existing building. Thermovision and application of thermovision in buildings.			
Literature: <ol style="list-style-type: none"> 1. D. Šumarac, <i>Energetska efikasnost zgrada</i>, Građevinski fakultet Beograd, Beograd, 2005. 2. D. Marković, <i>Procesna i energetska efikasnost</i>, Univerzitet Singidunum, Beograd, 2010. 3. D. Gvozdenc, B. Gvozdenc-Urošević, Z. Morvaj, <i>Energetska efikasnost - Industrija i zgradarstvo</i>, FTN izdavaštvo, Novi Sad, 2012. 4. <i>Pravilnik o energetskej efikasnosti zgrada</i>, Službeni glasnik RS: 061/2011 Datum: 19.08.2011. 			
Number of active classes			Other forms of teaching:
Lectures: 3	Practical classes: 2	Laboratory classes: 1	
Teaching methods: Lectures. Practical exercises. Consultations. The exam consists of two midterm exams, a seminar paper which represents the Energy Efficiency Study of the given facility and the final exam. Assessment of the exam is based on the attendance to lectures and exercises, points from the colloquium, points at the seminar and the success at the final exam.			
Grading system (maximum 100 points), grading scale 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.			
Pre-commitments	points	Final exam	points
activity during lectures	10	written exam	-
colloquium(s)	20 + 20	oral exam	30
seminar paper(s)	20		
Sum	70	Sum	30