

Study program: Urban engineering			
Type and level of studies: Bachelor			
Course unit: Energy and Environmental Management			
Teacher in charge: Dušan R. Gordić			
Language of instruction: <i>English</i>			
ECTS: 6			
Prerequisites: Electrical engineering, Thermodynamics			
Semester: Summer Semester			
Course unit objective			
Promoting the idea of joint management of energy and environment at the engineering level, developing engineering way of thinking among students to solve practical problems, developing the ability to think and to work in a team.			
Learning outcomes of Course unit			
Upon completion of the course, students will be able to:			
<ul style="list-style-type: none"> • Apply the techniques of the energy and waste auditing, • Identify and describe the measures for reducing energy consumption and increasing environmental protection in industrial, commercial and municipal systems, • Carry out a techno-economic evaluation of the proposed measures, • Use spreadsheet software applications for effective joint management of energy and environment 			
Course unit contents			
<i>Theoretical classes</i>			
Introductory remarks and definitions of joint management of energy and environment; energy and environmental management matrix; energy and environmental policy; Energy and waste assessment (auditing); Equipment for energy auditing; Optimization of energy production, distribution and consumption (electricity, heat, cooling, water) in industrial plants, public buildings and utilities; Checking system performance (measurement and data collection, benchmarking, monitoring and targeting, system revision); New technologies; Project management and financing energy and environmental management projects.			
<i>Practical classes</i>			
Practical classes include aditory exercises (techno-economic analysis of a concrete situation) and laboratory exercises (work with equipment for energy auditing). As part of a research study work students will be trained for basic research in the field.			
Literature			
1. Gordic D., Energy and Environmental Management, Handouts, Faculty of Engineering, Kragujevac, 2016			
2. Capehart B., Turner W., Kennedy W.: Guide to Energy Management, 4th ed., The Fairmont Press,2003.			
3. Hasanbeigi A., Price, L., Industrial Energy Audit Guidebook: Guidelines for Conducting an Energy Audit in Industrial Facilities, LBNL-3991E, https://china.lbl.gov/sites/all/files/guidebooks/Industrial_Energy_Audit_Guidebook_EN.pdf			
Number of active teaching hours			Other classes
Lectures: 3	Practice: 2	Other forms of classes: mentoring system	
Teaching methods			
Teaching is performed through lectures and exercises (auditory and laboratory). Lectures are covered with multimedia instructional content. During the semester, the knowledge of students is continually checked (through tests). Students are required to realise project assignment (seminar) which should be defended at the final exam.			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures	10	oral examination	30
practical classes/tests	30	written examination	
Seminars/homework	30	
Project			
Other			
Grading system			
Grade	No. of points	Description	
10	91-100	Excellent	
9	81-90	Exceptionally good	
8	71-80	Very good	
7	61-70	Good	
6	51-60	Passing	
5	0-50	Failing	