

Study program: Waste management			
Course title: Eco design			
Professor/assistant: PhD Miloš S. Ristić			
Type of course: elective			
ECTS credits: 7			
Pre-requisites: -			
Aims of the course: Preparing students to:independently analyze the product from the aspect of environmentally acceptable design;learn the methodology for the development of an environmentally justified product, understand a life-cycle analysis of the product.			
Learning outcomes: Student is able to: explain the importance of design for the environment (Design for Environment),explain the importance of product development and the application of standards and directives in the initial stages of development,analyze the life cycle of a particular product and its phases, select the optimal eco-material and the technological process of making the designed product, identify key elements for the development of a new environmentally friendly product, in accordance with requirements, criticizeand justify the technical solutions of an environmentally justified product.			
Syllabus			
<u>Theoretical part</u> Fundamentals of the process of designing and constructing products. The importance of the product design phase. Basic concepts and terms of an eco-design. Methodology and methods of ecodesign. Designing a product suitable for the environment. Application of environmentally justified materials. Use of "green" manufacturing technologies. Simultaneous engineering. Product lifetime. Product life cycle analysis. Analysis of product technology. Reduction of costs. More efficient use of natural resources. Integrating environmental aspects into product design and development (ISO 14062 standard). Eco design and labeling of eco products. Significance of sustainability in designing products suitable for the environment. Introduction of new sustainable products.			
<u>Practical part</u> Analysis of the product and its components. Product life cycle analysis. Product technology. Phase "end of life" of the product - deposit, reparation or recycling? Decision making process at the earliest stages of product design. Material selection. Choice of technological procedure. Use of MET matrix (material, energy, toxicity). Optimization of the solution. Ecodesign in standards 14062 and 14006. Designing an environmentally justified product.			
Literature			
1. S. Kuzmanović, <i>Industrijskidizajn</i> , FakultettehničkihnaukaNoviSad, 2012.			
2. J. Fiksel, <i>Design for Environment A Guide to Sustainable Product Development-second edition</i> , McGraw-Hill, 2009.			
3. M. Đorđević, <i>Dizajn i ekologija: održivirazvojproizvoda</i> , Mašinskifaklutet, Beograd 2012.			
Number of active classes			Other forms of teaching:
Lectures: 2	Practical classes: 3	Research work:	
Teaching methods Theoretical classes take place through the use of presentations and video materials. The methods of brainstorming, mind mapping, check-list, benchmarking. Teamwork. Software tools. The use of standards.			
Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade7 from 61-70 points, grade8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	10	written exam	
practical training	30	oral exam	30
colloquium(s)/project	10/20		
Sum	70	Sum	30