

Study program: Environmental Protection			
Course title: Life Cycle Analysis			
Professor/assistant: Dejan Blagojević			
Type of course: elective			
ECTS credits: 6			
Pre-requisites: -			
Aims of the course: Prepare students to: develop systematic approach in the analysis of environmental problems, provide understanding of theoretical aspects, as well as to gain experience in the analysis of the life cycle of products and processes.			
Learning outcomes: Students will able to: recognize different alternative tools for assessing the impact on the environment and choose the appropriate procedure-method to solve the identified problem, identify the main factors (inverters) of the product or the technical system and examines their impact on the environmental system, understand the main objectives and principles of the LCA and define the objective, purpose and scope of the necessary analysis, analyze the life cycle phases from the aspect of the used energy and the achieved emissions of each of the phases, make decisions through critical review in accordance with ISO standard, apply a shortened LCA and propose improvement measures to reduce the environmental impact of products or processes harmful to the environment, produce a framework LCA report in accordance with the guidelines and terminology of the ISO standard.			
Syllabus			
<u>Theoretical part</u> Basics of Life Cycle Analysis (LCA) and other methods for assessing environmental impact. Life cycle analysis and functional unit. ISO Standards - Objectives, Purpose, Area, Restrictions. Analysis of product life cycle inverters, distribution (according to ISO). Evaluation of the impact, interpretation and restriction of access to product life cycle. Data quality, documentation. Environmental Impact Assessment: characterization, characterization by toxicological activities, eco-indicators. Nus-products. Interpreting, evaluating, checking (completeness, consistency, sensitivity). Critical review of LCA. Eco product design. Development of guidelines for reducing the environmental impact. End of life cycle of the product. New product value.			
<u>Practical part</u>			
Literature			
<ol style="list-style-type: none"> Standards: SRPS ISO 14040:2008; i ISO 14044:2008. De Bruijn H., Van Duin R., Huijbregts M., <i>Handbook on Life Cycle Assessment – Operational guide to the ISO standards</i>, Kluwer Academic Publishers, 2004. United Nations Environment Programme, <i>Life Cycle Approaches - The road from analysis to practice</i>, UNEP/ SETAC Life Cycle Initiative Allan Astrup Jensen, Leif Hoffman, Birgitte T. Møller, Anders Schmidt, <i>Life Cycle Assessment - A guide to approaches, experiences and information sources</i>, European Environment Agency, 1997. 			
Number of active classes			Other forms of teaching:
Lectures: 2	Practical classes: 2	Research work:	
Teaching methods Using of audio-visual presentations Students are introduced into the preparation of practical seminar work on the subject of a complete life-cycle analysis of products (or processes).			
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-exam obligations	points	Final exam	points
activity during theoretical lectures	10	written exam	-
practical training	-	oral exam	30
seminar papers/practical work	30/30		
Sum	70	Sum	30