Study program: Industrial Engineering

Course title: Energy and Environment

Professor/assistant: Aleksandra Boricic / NatalijaTosic

Type of course: elective

ECTS credits: 6

Pre-requisites:

Aims of the course: Prepare students to:
-integrate conceptssuch as energy,energy resources, heatbalance,energy reserves,renewable and non-renewable energy sources,
-learnwaysto protectthe environment,
-apply the useof clean technologiesin industry,
-identifyand implementlegislationrelated toenvironmental protection

Learning outcomes: After taking the course, students will be able to:
- analyze the problems related to energy transformation and balancein teamsor independently,
- define the energy polluters,
- make the thermal load of the environment,
- describe the principles of analysis of the impact of energy transformations on the environment.

Syllabus
Theoretical part Concept and types of energy. Useful energy. Natural energy. Energy resources. Renewable sources of energy. Non-renewable energy sources. Energy production. Energy transformation and balance. Transformation of energy systems. Energy polluting the environment. On the energy pollutants in general. Thermal power plants. Power plants in the industry. Transport and urban areas. Air protection. Thermal load of environment. Radioactive contamination of the environment. Types of radiation. The impact of nuclear power plants. Industrial waste. Waste management. Energy efficiency and measures to improve energy efficiency. Emissions of pollutants. Kyoto Protocol. Denmark strategy. Legislation.

Literature
1 MilunBabic, NebojsaLukic, DusanGordić: Energy and Environment(in Serbian), Faculty of Mechanical Engineering, 2008.
2 NenadZivkovic, Amelia Djordjevic: Air Protection(in Serbian), Faculty of Occupational Nis 2001.
3 Milan Despotovic, MilunBabic: Energy of biomass, monographs(in Serbian), Faculty of Mechanical Engineering, Kragujevac, 2007.
4 NebojsaLukic, MilunBabic: Solar Energy, monographs(in Serbian), Faculty of Mechanical Engineering, Kragujevac, 2007.
5 Bozo Udovičić: Energy and Environment(in Serbian), Volume I, II, III, IV, IRO "Building Book" Belgrade, 1989.

Number of active classes			Other forms of teaching:
Lectures: 2	Practical classes: 3	Research work:	

Teaching methods Combined, interactive approach with practical problem solving.

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	**30**
practical training	**10**	oral exam	
colloquium(s)/seminar papers	**50**		
Sum	**70**	**Sum**	**30**