Information sheet for the course
Energetics and Environment

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Industrial Technologies in Púchov*	
Course unit code: *MI-P-19*	**Course unit title:** *Energetics and Environment*
Type of course unit: *optional*	
Planned types, learning activities and teaching methods: *Lecture: 2 hours weekly/26 hours per semester of study; face to face* *Seminar: 2 hours weekly/26 hours per semester of study; face to face* *Laboratory tutorial:0*	
Number of credits: *5*	
Recommended semester: *3rd semester in the 2nd year full-time* *3rd semester in the 2nd year part-time*	
Degree of study: *the 1st degree of study (Bachelor's degree)*	
Course prerequisites: *none*	
Assessment methods: *Student will elaborate the project focused on a detailed analysis of the use of energy resources in their own households proposal of specific austerity and design energy saving, environmental household using alternative energy sources and innovative environmental technologies.. Each student will present finished project in the form of ppt presentation to lecturer and students on the seminar. After the presentation, student will answer the questions during the discussion. After passing of all Lecturers and exercises focused on selected energy calculations, students will pass the written examination which will be focused on theoretical knowledge, knowledge and skills from energy calculations obtained during the semester. The successful defense of project and acquirement 50 points in minimum from written examination are minimum conditions for obtaining of credits.*	
Learning outcomes of the course unit: *Student will acquire knowledge he field of conventional energy, knows the context and the relationship between the use of traditional energy sources - fossil fuels and specific negative effects on the environment, understand the principles of labor power facilities and technologies to reduce emissions of different types of energy. Student also get a basic understanding of the most important alternative energy sources. Student understand the basic theories, methods and procedures that are used in the field. Student is able to analyze and evaluate solved problem and he is able to propose solutions for prevention of negative influences of energy management on environment.*	
Course contents: 1. *Basic concepts, types of energy, energy, energy sources. Causes and consequences of the disruption of the ecological balance, the effects of energy on the environment and human health.* 2. *Classification of fuels. Thermal energy. Traditional sources of energy – fossil fuels, fuel properties.* 3. *Burning of fuels and fossil fuel combustion, preheating of combustion air.* 4. *Balance calculations of fossil fuels combustion process.* 5. *The basic types of industrial furnaces - construction, characteristics, principles of work.* 6. *Chimneys – function, definition of the flue flow driving force in the chimney, basic relations.* 7. *The use of fossil fuels, power plants, ecotoxicological problems and their solutions.* 8. *Gasification of fossil fuels and carbon substances.* 9. *Methods of reducing emissions of SOx and NOx.*	

10. *Introduction to the alternative energy sources. Water energy, wind energy, solar energy, biomass and geothermal energy.*
11. *Nuclear energy - equipment, principle of work of nuclear reactor, safety precautions and environmental impacts.*
12. *Nuclear fusion energy - equipment, principle of work, safety precautions and environmental impacts.*
13. *The hydrogen economy - hydrogen production, hydrogen fuel cell, safety precautions and environmental impacts.*

Recommended of required reading:

1. LANGFELDER, I.A KOL.: ENERGETIKA CHEMICKÉHO A POTRAVINÁRSKEHO PRIEMYSLU. BRATISLAVA: ALFA, 1992. 236 S. ISBN 80-88914-19-1
2. RIEDEL, R..: HOSPODAŘENÍ ENERGIEMI. PRAHA/BRATISLAVA: SNTL/ALFA, 1971. 252 S. ISBN: 04 - 404 - 71
3. TOLGYESSY, J. LESNÝ, J.: SVET HĽADÁ ENERGIU. BRATISLAVA: OBZOR, 1979. 396 S. ISBN: 735-21-85/5
4. BIENIK, J.: ROPA, ZEMNÝ PLYN A ŽIVOTNÉ PROSTREDIE. BRATISLAVA: ALFA, 1982. 240 S.
5. VOŠTA, J. MATĚJKA, Z. MACÁK, J.: ENERGETIKA. PRAHA: VŠCHT, 1999. 249 S. ISBN 80-7080-358-4

Language: *Slovak*

Remarks:

Evaluation history:

Number of evaluated students: *0*

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Lecturers: *prof. Ing. Darina Ondrušová, PhD., Ing. Jana Pagáčová, PhD.*

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Supervisor: *prof. Ing. Darina Ondrušová, PhD.*