Information sheet for the course
Selected Chapters from Silicate Engineering

University: *Alexander Dubček University of Trenčín*	
Faculty: *Faculty of Industrial Technologies in Púchov*	
Course unit code: *MI-I-PV-39*	**Course unit title:** *Selected Chapters from Silicate Engineering*
Type of course unit: *optional*	
Planned types, learning activities and teaching methods: *State Examination Subject ; face to face*	
Number of credits: *2*	
Recommended semester: *4th semester in the 2nd year full-time* *6th semester in the 3rd year part-time*	
Degree of study: *the 2nd degree of study (Engineer's degree)*	
Course prerequisites: *Completion of all compulsory and optional courses of the study plan, including MI-I-PV-14B Silicate Engineering.*	
Assessment methods: *Successful completion of the state examination subject.*	
Learning outcomes of the course unit: *Student will successfully complete the state examination subject.*	
Course contents: 1. *Process running at thermal treatment of materials in silicate industry.* 2. *The basic types of industrial furnaces - classification, work principle of industrial furnaces.* 3. *The classification and characterization of fuels - classification of fuels according to origin and consistency, characterization individual types of fuels, general properties of fuels. The depletion of the ozone layer - the ozone and ozone layer, the causes and consequences creation of the ozone hole, the possible solutions.* 4. *Combustion, balance of combustion.* 5. *The flow of gas - types of pressures and their description, the flow of gas in horizontal pipelines, vertical flow of gas, chimneys.* 6. *Conductive heat transfer and calculations - Fourier's equation and her description, heat conduction planar wall, heat conduction cylindrical wall, thermal losses, insulation materials.* 7. *Convective heat transfer and calculations - Newton's equation and her description, thermal criteria and flow criteria, heat conduction at spontaneous convection, heat conduction at forced convection.* 8. *Radiation heat transfer and calculations - perfectly black solid, heat radiation between two perfectly black solids, heat radiation between two perfectly gray solids, heat radiation of gas and flame.* 9. *Combined heat transport* 10. *The heat exchangers - types of exchangers and their function, heat transfer in heat exchangers.* 11. *Heat balance of the furnace - heat balance of the furnace without and with heat exchanger, thermal efficiency furnace. Periodically and continuously operating equipment and their differences.* 12. *Non-stationary heat transfer - description of non-stationary heat transfer, Fourier's equation of non-stationary heat transfer, methods of solving differential equations.* 13. *Cooling, cooling curve, calculations*	
Recommended of required reading:	

1. *1 Rédr, M. - Příhoda, M.: Základy tepelné techniky. Praha, SNTL, 1995. 669 s.*
2. *Rédr, M. - Gottwald, M. - Říman, A. - Rejč, R.: Tepelné výpočty a optimalizace vyzdívek prumyslových pecí. Praha, SNTL, 1975. 351 s. ISBN 40-408-75*
3. *Kuna, L.: Žiaruvzdorné výmurovky priemyselných pecí. Bratislava, SVTL, 1999. 205 S*
4. *Vošta, J. - Matějka, Z. - Macák, J.: Energetika. Praha: VŠCHT, 1999. 249 s. ISBN 80-7080-358-4*

Language: *Slovak*

Remarks:

Evaluation history

The total number of evaluated students: *0*

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

Lecturers: *Ing. Darina Ondrušová, PhD.*

Last modification: *31.03.2014*

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