

Information sheet for the course Glass Technology

University: <i>Alexander Dubček University of Trenčín</i>	
Faculty: <i>Faculty of Industrial Technologies in Púchov</i>	
Course unit code: <i>MI-I-PV-3B</i>	Course unit title: <i>Glass Technology</i>
Type of course unit: <i>optional</i>	
Planned types, learning activities and teaching methods: <i>Lecture: 2 hours weekly/26 hours per semester of study; face to face</i> <i>Seminar: 1 hour weekly/13 hours per semester of study; face to face</i> <i>Laboratory tutorial: 2 hour weekly/26 hours per semester of study; face to face</i>	
Number of credits: <i>6</i>	
Recommended semester: <i>2nd semester in the 1st year full-time</i> <i>2nd semester in the 1st year part-time</i>	
Degree of study: <i>the 2nd degree of study (Engineer's degree)</i>	
Course prerequisites: <i>none</i>	
Assessment methods: <i>Working out of written verification focused on obtained knowledge during semester.</i> <i>Minimum condition for obtain of credits is obtaining min. 50% points from written certification.</i>	
Learning outcomes of the course unit: <i>The students have basic knowledge from technology of glass, from individual of types of glass raw materials and preparation strain, through melting, formation and cooling of glass, until basic techniques of fining of glass. They can recognize and understand influence of the surrounding on physical and chemical properties of glass and on formation inhomogeneity in glass and in glass products. They have knowledge about composition and properties different types of industrially produced glasses and they can recognize technological procedure their production. Their knowledge they prove to apply at solution of concrete technical problems.</i>	
Course contents: <ol style="list-style-type: none"> <i>1. Introduction to the technology glass. Formation and occurrence of glass. Basic chemistry of glass preparation.</i> <i>2. Technologically important oxide and their function in glass. Technologically important inorganic glass-forming systems.</i> <i>3. The glassy raw materials. Glassy sand. Raw materials of aluminium. Raw materials of sodium. Raw materials of potassium. Raw materials of boric. Raw materials of calcium and magnesium. The raw materials are bringing minor components to the glass. Preparation of glassy strain. Utilization of sorted glassy waste. Mechanical preparation of the input raw materials.</i> <i>4. The melting of glass. The mechanism of melting. Glass plaining and homogenisation of glass.</i> <i>5. The bleaching glass. Color of crystal glasses.</i> <i>6. The cooling of glass. The theory of glass.</i> <i>7. Technological requirements for the properties glass (chemical, physical, mechanical, thermal and optical).</i> <i>8. The corrosion of glass. Defects in the glass: striae and their division, rhinestones and bubbles. Combined heat transport</i> <i>9. The basic types of industrially produced glass. Utility glass. Container glass. Technical and flat glass. Glass jewelery.</i> <i>10. Glass furnaces. Ladle furnace. Recuperative furnace. Regenerative furnaces. Glass</i> 	

equipment.

11. *The refractory materials. Characteristic types of refractory materials and their properties.*
12. *The glass decoration and fining glass.*
13. *Mechanical glass processing: grinding, engraving, drawing and dotting by diamond, sandblasting. Heat treatment of glass.*

Recommended of required reading:

1. *J.Hlaváč: Základy technologie silikátů. SNTL, Praha 1988, 516 s.*
2. *V.Šatava: Úvod do fyzikální chemie silikátů. SNTL, Praha 1965, 408 s.*
3. *M.Paleček a kol.: Sklářské praktikum. SNTL, Praha 1990, 455 s.*
4. *A.Smrček, F.Voldřich: Sklářské suroviny. Informatórium, Praha 1994, 387 s.*
5. *I.Fanderlik: Vlastnosti skel. Informatórium, Praha 1996, 313 s.*
6. *S.Bachtík, V.Pospíchal: Zušlechťování skla. SNTL, Praha 1964, 295 s.*
7. *M.B.Volf: Sklo ve výpočtech. SNTL, Praha 1984, 332s.*
8. *M.B.Volf: Technická skla a jejich vlastnosti. SNTL, Praha 1987, 318 s.*

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: *prof. Ing. Darina Ondrušová, PhD.*

Last modification: *31.03.2014*

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