



COURSE DATASHEET

Semester:	2014/15/1
Course:	Properties of Nonmetallic Structural Materials
Code:	VEMKSIB444N
Responsible department:	Institute of Materials Engineering
Department code:	MKSI
Responsible instructor:	dr. Margit Eniszné Bódogh

Course objectives:

Introduction the theory of the most important chemical and physical process taking place in technologies, attaining of the necessary empirical materials knowledge

Course content:

Characterization of crystal structures, ionic crystal structures. Correlation between the main physical properties and crystal structures. Structure of silicates. Classification of silicates, correlation between the structure and physical properties. Clay minerals. Classification and types of rocks, origin and main minerals of igneous, sedimentary and metamorphic rocks. Preparing and enrichment of raw materials. Colloidal state, characteristics of colloidal disperse systems. Solid state reactions, determination of the direction of solid state reactions founded on thermodynamic consideration. Calculation of mineral composition of raw materials. Characterisation of glassy state, structure and properties of glasses, correlation between the structure and properties of glasses. Phase diagrams of one-component, biner and ternary systems. Test procedures, X-ray diffraction phase analysis. Processes taking place during the heat treatments, thermal analysis.

Requirements, evaluation and grading:

The whole content of lectures is included in the written examination.

Grading is based on two written (The marks are required at least 2) midterm examinations and one written final examination.

The final mark is determined according to following table based on the weighted average of the three examinations (1st midterm 15%, 2nd midterm 15%, final written examination 70%):

points	final mark
above 80	excellent (5)
70-79	good (4)
60-69	medium (3)
50-59	pass (2)
below 50	fail (1)

Required and recommended readings:

Friedrich Liebau: Structural chemistry of Silicates (Springer Verlag, Berlin, 1985; Tamás F.: Szilikátipari



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kézikönyv, Műszaki Könyvkiadó, Budapest, 1982; Juhász A. Z.: Bevezetés a szilikátkémiai technológiába I. (VE jegyzet, 1985)