UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2016/17/1
Course:	Technology of glasses, heat-insulating- and refractory materials
Code:	VEMKSIB244G
Responsible department:	Institute of Materials Engineering
Department code:	MKSI
Responsible instructor:	dr. Tamás Korim

Course objectives:

Teaching glasses- and refractory materials, its technology, characteristic features and applications fields of products made.

Course content:

The history of glass, Determination of glassy state, glass forming; Raw materials of glass manufacture, their role in property development; Batch preparation, -transporting, -storage, -feeding; Type of glasses; their special properties; Physical- and chemical changes under the melting of glass; Classification of glassmelting processes, Main properties of thermoplastic melting glass (viscosity, surface tension, devitrification); Structural constitution and types of glassmelting kilns, Considerations of selecting glassmelting kilns; Practical considerations of glassmelting, Shaping of glass products (drawing, centrifuging, pressing, blowing, casting); Physical- and chemical reasons for glass defects; Physical- and chemical reasons for stresses in glass products: classification, elimination, Secondary processing and final development of glass products. Definition, classification and properties of refractories. Silica refractories. Alumina-silica refractories and their raw materials. High-alumina and cordierite refractories. Basic refractories. Chromite and forsterite refractories. Fused cast refractories. Non-oxide refractories. Heat-insulating refractories. Refractory concretes, ramming and gunning masses, as well as mortars. The heat balance for the continuous furnace of brickworks (seminar). Shaft furnaces and the material balance for lime kilning (seminar).

Requirements, evaluation and grading:

Required and recommended readings:

Tamás F.: Szilikátipari kézikönyv, Műszaki Könyvkiadó, Budapest, 1982 Brook, R. J.: Processing of Ceramics I-II. VCH Publisher Inc., New York, 1996 Déri M.: Szilikátkémiai technológia, VE jegyzet, Veszprém, 1976. Knapp O., Korányi Gy.: Üvegipari kézikönyv, Műszaki Könyvkiadó, Budapest, 1964 Rawson H.: Properties and Applications of Glass, Elsevier Scientific Publishing Company, 1980. Zarzychi J.:Glasses and Amorphous Materials, VCH Publisher Inc., New York, 1991