# UNIVERSITY OF PANNONIA

## COURSE DATASHEET

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| **Semester:** | 2014/15/2 |
| **Course:** | Ceramics, Polymers and Composites |
| **Code:** | VEMKSIM314K |
| **Responsible department:** | Institute of Materials Engineering |
| **Department code:** | MKSI |
| **Responsible instructor:** | dr. Kristóf Kovács |

**Course objectives:**

Introduction technologies, properties, measuring methods and applications of advanced ceramics, glasses and composites

**Course content:**

Physical properties of superconducting and magnetic ceramics Production techniques and characterization of ceramic superconductors Bioceramics and ceramic coatings Production and properties of bioactive materials Ceramic materials with X-ray, IR, UV, laser, etc. radiation transmittivity Ceramic materials using in nuclear technique Electronic ceramics: dielectrics, piezoelectrics, semiconductors. Ionic conductors Production and characterization of ceramic composites. Strengthening mechanism Micro- and macrostructure of ceramic composites Fibrous grained, plate composites, whiskers, nano composites Types, production, properties and applications of composites with metal matrix Composites with glass matrix. Special composites. Elastic concrete, fibre reinforced cements, polymer containing composites Optical, biological and electronic applications of composites The future trends of composites manufacturing Utilization of waste synthetic materials Application of nanotechnology in electronic industry and surgery

**Requirements, evaluation and grading:**

Compulsory attendance of the lectures, grading is based on a written examination

**Required and recommended readings:**

J. Evetts: Magnetic and Superconducting Materials, Pergamon Press Oxford 1992 J. C. Anderson: Materials Science, Chapman & Hall London 1990 P. Ducheyne, D. Christiansen: Bioceramics, Pergamon Press Oxford 1993 R. P. Sheldon: Composite Polimeric Materials, Applied science Publishers London 1982 E. J. Kramer: Structure and Properties of Composites, VCH Publishers Weinheim 1993 A. Kelly: Fabricaton of Composites, Elsevier S. P. Amsterdam 1983 D. W. Richerson:Modern Ceramic Engineering, Marcel Dekker Inc. New York 1982 Pukánszky Béla: Műanyagok, Műegyetemi Kiadó, Budapest 1995 Bodor Géza: A polimerek szerkezete, Műszaki Könyvkiadó, Budapest 1982 Füzes László-Kelemen Andorné: Műszaki anyagok zsebkönyve, , Műszaki Könyvkiadó, Budapest 1989