Course Syllabus

Department/Faculty
School of Engineering

Graduate Program
Materials Engineering and Nanotechnology

Degree
☒ Academic Master's ☒ Doctorate (PhD) ☐ Professional Master's

Course Name
Advanced Ceramic

Professor(s)

Office hours
48

Course Overview

An advanced course to treat the theory and testing practice related to properties of advanced ceramics. The course also includes a laboratory consisting of experiments to determine mechanical properties of ceramics pieces and use of Weibull statistics.

Topics outline

Crystal structure of ceramics
Mechanical properties of ceramics; Weibull statistics.
Electrical behavior: insulating (dielectric, ferroelectric, piezoelectric) semiconducting and superconducting;
Magnetic behavior: basic principles, materials and their applications
Bio-medical applications of ceramic materials
Ceramics matrix composites (including nanocomposites)

Letter Grade Assignment
Grade A (Excellent) - Grade points between 9 and 10
Grade B (Good) - Grade points between 8 and 8.9
Grade C (Satisfactory) - Grade points between 7 and 7.9
Grade D (Unsatisfactory) - Grade points between 0 and 6.9

Texts, Materials, and supplies

RICHERSON, D.W. Modern Ceramic Engineering: Properties, Processing, and Use in Design. 3th. ed. New York:CRC, 2005.
REED, J.S. Principles of ceramic processing, 2nd edition 1995
RAHAMAN, M.N. Ceramic Processing and Sintering, Marcel Deker, 2003.
BARSOUM, M.W. Fundamentals of ceramics. Philadelphia:Drexel University, 2002.
SHIGEYUKI SOMIYA. Handbook of Advanced Ceramics (Second Edition) Materials, Applications, Processing, and Properties, Elsevier, 2003.

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