



MH1031 Ceramic Materials 8.0 credits

Keramiska material

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

On 16/12/2020, the Dean of the ITM school has decided to establish this official course syllabus to apply from spring term 2020 (registration number M-2020-2660)

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

MH1030 Materials Design I or equivalent

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the student should be able to:

- Give examples of, and explain structures of ceramics
- Give examples of, and explain important physical and thermal properties of ceramics.
- Describe the most important defects in ceramics and write down defective reactions.
- Explain diffusion, electrical and thermal conduction in ceramics.
- Describe glass, especially its formation, structure and properties.
- Explain the preparation, especially powder synthesis, powder characterization, shaping and sintering, of ceramics.
- Explain and perform calculations on the mechanical properties of ceramics

Course contents

The basics of making both traditional and advanced ceramics; crystal structures and bondings of ceramic materials; defects; melting point, surface energy; diffusion, electrical and thermal conduction; glass formation; mechanical properties and fractography; statistical fracture theories; time-dependent fracture; toughening mechanisms; thermal shock.

Examination

- **TEN1** - Written exam, 6.0 credits, grading scale: A, B, C, D, E, FX, F
- **LAB1** - Laboratory work, 2.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.