



Course syllabus

Faculty of Technology

Department of Built Environment and Energy Technology

2KT314 Glas och glaskeramer - struktur, egenskaper och teknologi,
7,5 högskolepoäng

Science and Engineering of Glass and Glass-ceramics Materials, 7.5
credits

Main field of study

Chemistry

Subject Group

Materials Technology

Level of classification

First Level

Progression

G2F

Date of Ratification

Approved by Faculty of Technology 2018-11-26

The course syllabus is valid from autumn semester 2019

Prerequisites

60 credits studies in chemistry, chemical engineering or material science/engineering or equivalent.

Basic command of English is required. (English B/English 6)

Objectives

After completing the course the student should be able to categorize the materials glass and glass-ceramics from the perspective of chemical composition, structure, production, properties and their potential applications in advanced technologies.

The student should be able to predict and solve materials science related problems within process technology.

Content

The course contains the following elements:

- Material and properties definitions
- Methods for synthesis
- Chemical compositions of the materials
- Critical process parameters: raw materials, relation to materials chemistry, process reactions and properties for manufacturing
- Furnace and forming technologies: principles, energy consumption and environmental impact
- Properties of the solid materials and their relation to the chemical composition
- Various types of glasses and glass ceramics and their modern applications

Type of Instruction

Theory from lectures alternatively own studies of literature. Exercises and laboratory work either as specific tasks or as part of ongoing research project.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

Assessment of the student's performance usually takes place during the special examination periods and can be done through project work (3 credits), assignments (1.5 credits) and written exams (3 credits). Examination is done by written test alternatively written report for all credits.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 2KE913 and 2KT313, 7,5 hp

Other

Some elements of the course may entail costs defrayed by the course participant.

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

James.E. Shelby, Introduction to Glass Science and Technology, 2nd edition, Royal Society of Chemistry 2005; ISBN 0854046399308.

Arun K. Varshneya, Fundamentals of Inorganic Glasses, 2nd edition, Society of Glass Technology 2006; ISBN 0900682515.