FKE3070 Catalyst Deactivation 5.0 credits

Katalysatordeaktivering

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

Establishment

Course syllabus for FKE3070 valid from Autumn 2022

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Eligible for studies at the third-cycle level and MSc in chemical engineering, chemistry or physics with a specialization in materials chemistry/material physics and/or catalysis.

The PhD student should have experience of experimental studies in heterogeneous catalysis.

Language of instruction

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

Intended learning outcomes

After completion of the course the doctoral student should have the knowledge and ability to

- discuss applications of catalysts in industrial catalytic processes
- evaluate deactivation mechanisms
- analyze sintering, coking and poisoning
- apply expressions for deactivation kinetics at design of catalytic reactors
- discuss the routes to carbon in various industrial processes
- propose industrial catalyst regeneration procedures to promote sustainable development
- relate evaluation of deactivation in laboratory scale to deactivation in industrial environments

Course contents

- Secondary phenomena and plant design
- Sintering
- Poisoning
- Routes to carbon
- Carbon formation on metals
- Fouling of catalysts
- Intraparticle
- Process influence on catalyst deactivation
- Catalyst deactivation studies

Examination

- TEN1 - Home exam, 5.0 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.

Individual examination assignment based on own research.

Other requirements for final grade

At least 80% participation in lectures and seminars.

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.