



KD2310 Advanced Organic Chemistry 7.5 credits

Organisk kemi, fortsättningskurs

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

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

Establishment

Course syllabus for KD2310 valid from Autumn 2023

Decision to discontinue this course

The course is given for the last time in Autumn 2022. The last opportunity to take an examination in the course is given in Autumn 2024. The students must contact the examiner for information about the project task. Moment (PRO1) – Project assignment can be completed on two occasions during the next two years (ie once a year) after the course has been given for the last time. Moment (TEN2) - Written exam is offered four times in the next two years (ie twice per year) after the course is given for the last time.

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering, Chemistry and Chemical Engineering

Specific prerequisites

At least 150 credits from grades 1, 2 and 3 of which at least 110 credits from years 1 and 2, and bachelor's work must be completed, within a programme that includes:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding.

The course KD1270 Organic Chemistry, Basic Concepts and Practice 2 or equivalent knowledge.

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 student will be able to:

- Describe, explain, and compare the reactivity in organic chemistry and synthesis with for example reaction mechanisms and concepts in physical organic chemistry.
- Analyze and evaluate processes in organic chemistry from a green and sustainable perspective.

Course contents

Short course description:

- Focus on reactivity and synthesis in organic chemistry.
- Principles and factors governing reactions of organic compounds.
- Application of the concept of green chemistry in organic chemistry for sustainable development.
- The process of drug development in the pharmaceutical industry.
- Application of organic chemistry in medicinal and pharmaceutical chemistry.

Detailed course description:

- Delineate mechanisms for reactions in organic chemistry.
- Application of organic reactions in multi-step synthesis.
- The process of drug discovery in the pharmaceutical industry.
- Principles concerning green- and sustainable chemistry.
- Principles regarding reaction energetics and reaction kinetics.
- Application of molecular orbital theory on reactivity and stereochemistry.
- Principles for the rationalization of regio- or enantioselective reaction outcomes.
- Silicon, phosphorous, and sulfur in organic chemistry.

- Basic metal-organic chemistry.
- Application of knowledge in organic chemistry on pharmaceutical and medicinal chemistry.

Examination

- PRO1 - Project, 1.5 credits, grading scale: P, F
- TEN2 - Written exam, 6.0 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

The final grade will be the same as for the examination

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.