KD1100 Organic Chemistry 2 7.5 credits

Organisk kemi 2

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

Establishment

Course syllabus for KD1100 valid from Spring 2013

Grading scale

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

Education cycle

First cycle

Main field of study

Chemistry and Chemical Engineering, Technology

Specific prerequisites

Completed upper secondary education including documented proficiency in English corresponding to English A. For students who received/will receive their final school grades after 31 December 2009, there is an additional entry requirement for mathematics as follows: documented proficiency in mathematics corresponding to Mathematics A.

And the specific requirements of mathematics, physics and chemistry corresponding to Mathematics E, Physics B and Chemistry A.

Language of instruction

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

Intended learning outcomes

After the course, the student should be able to:

- handle organic substances and reactions in graphical form
- master organic chemistry nomenclature
- master basic organic chemistry, including the material from Organic Chemistry 1 (KD1090) or corresponding courses, based on the indicated sections of the course book
- master basic molecular orbital theory with respect to structure and reactivity
- explain the concepts of conjugation and aromaticity
- account for the reactivity and synthetic methods of conjugated and aromatic systems
- account for the reactivity and synthetic methods of carbonyl compounds and analogous substances
- account for the reactivity and synthetic methods of alcohols, thiols, amines and organometallic reagents
- master the concepts of oxidation and reduction and account for oxidative and reductive synthesis methods
- account for principles of green and sustainable organic chemistry
- account for basic synthetic radical chemistry
- apply knowledge of organic chemistry in pharmaceutical chemistry, biochemistry, polymer chemistry, and environmental chemistry
- retrieve information from chemistry literature databases and summarize it in written report
- master basic laboratory techniques: general synthetic methodology, vacuum distillation, recrystallization, chromatography and spectroscopic methods
- present laboratory work in written report

Course contents

- Basic principles of organic chemistry
- Conjugation and aromaticity
- Conjugated and aromatic compounds
- Carbonyl compounds and analogous substances
- Carboxylic acids, their derivatives and analogous substances
- Alcohols, thiols, amines and organometallic reagents
- Oxidation and reduction

- Radical chemistry
- Organic chemistry of biosynthesis and polymer chemistry
- Green and sustainable organic chemistry
- NMR-spectroscopy

The experimental part of the course is intended to provide skills in basic laboratory work, vacuum distillation, recrystallization, chromatography and spectroscopic methods.

Course literature

• Clayden, Greeves, Warren: Organic Chemistry, Oxford University Press, Oxford, 2012, ISBN 978-0-19-927029-3
• Säkerhetskompendium, Skolan för Kemivetenskap, KTH
• Laborationskompendium, Organisk kemi, KTH

Examination

- PRO1 - Project, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 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.

Other requirements for final grade

1. Written exam (TEN1), 3 credits
2. Laboratory practice (LAB1), 3 credits
3. Project (PRO1), 1,5 credit

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.