# KD2310 Advanced Organic Chemistry 7.5 credits

## Organisk kemi, fortsättningskurs

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

## Establishment

Course syllabus for KD2310 valid from Autumn 2011

## 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

_Admission requirements for programme students at KTH:
_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.

_Admission requirements for independent students:
_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.
Documented proficiency in English corresponding to English B.

## Language of instruction

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

## Intended learning outcomes

The course participant is, after fulfilling the course requirements, expected to be able:

-In a simple way discuss and explain whether a reaction is exothermic or not

-In a simple way discuss and explain if a reaction is irreversible, reversible or impossible

-Find out a reasonable reaction mechanism for a given reaction within the fields of organic and polymer chemistry

-In a simple way discuss if a reaction is fast or slow and which step within a reaction sequence that is rate determining

-Conclude if a hypothetical structure is an isolable compound or a fiction

-Briefly describe the process behind the development of a new drug

-Explain how a simple Molecular Orbital Theory can be used as a general concept to elucidate the reactivity of different compounds and eventual stereochemical preferences for a chemical transformation

-Explain the importance of hydrogen bonds for the outcome of many kinds of reactions, and in particular, how hydrogen bonds can prearrange Transition States both in solution and in enzyme-catalyzed reactions

-Explain how silicon, phosphorus and sulfur compounds can add reactivity possibilities in organic chemistry

-Explain how models involving six-membered cyclic Transition States in many cases can be used to rationalize regio- or enantioselective outcomes

-With help of the deeper understanding provided by the course, be able discuss advanced stereoselective organic synthesis

-Apply the knowledge provided by the course within the fields of pharmaceutical chemistry, biochemistry, polymer chemistry as well as environmental chemistry, chemical technology and cellulose processing

-Apply the deeper understanding in reactivity to achieve an improved understanding of how enzymes function

## Course contents

The course concentrates on reactivity in organic chemistry and the different factors affecting the organic reactions and reactivity.

## Course literature

“Organic Chemistry” by Clayden, Greeves, Warren and Wothers, Oxford 2001, ISBN 0 19 850346 6

## Examination

- TEN1 - Examination, 7.5 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.

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

## Other requirements for final grade

Examination (TEN1; 7,5 credits)

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.