

KEMB11, Chemistry: Organic Chemistry - Theory, 7.5 credits

Kemi: Organisk kemi - teori, 7,5 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2012-10-12 and was last revised on 2012-10-12. The revised syllabus applies from 2012-11-01, spring semester 2013.

General Information

The course is an optional course for first-cycle studies within the main field of study chemistry.

Language of instruction: English and Swedish
When necessary, the course in full is given in English.

Main field of studies

Chemistry

Depth of study relative to the degree requirements

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The course intends to provide advanced theoretical knowledge in synthetic organic chemistry and knowledge in physical organic chemistry.

Knowledge and understanding

To pass the course, the student should

- Be able to identify and name important organic reactions
- In detail be able to explain organic reactions outcomes from a mechanistic perspective

Competence and skills

To pass the course, the student should

- From the basic theory of the structure of the carbon compounds and electronic structure explain their acid-base properties, nucleophilicity and electrophilicity
- From the principles behind organic reaction theory predict reactivity and reaction pattern of simple carbon compounds
- Be able to plan and evaluate multistep syntheses via basic retrosynthetic analysis
- Be able to describe organic-chemical reactions in terms of orbitals
- Orally and in writing be able to discuss organic reactions regarding mechanisms and selectivity

Judgement and approach

To pass the course, the student should

- Demonstrate the ability to assess possibilities, limitations and risks with application of organic synthesis and organic compounds.

Course content

The course includes advanced understanding of basic organic reactions with an emphasis on the chemo-, regio- and diastereoselectivity of the reaction types. Structure and reactivity for organic compounds are analysed from an advanced understanding of stereochemistry and chemical bonding. The course is focused on a mechanistic approach to understanding the outcome of reactions, and to reinforce this reactions are often analysed in terms of orbitals. Based on the basic principles of reactivity and selectivity, synthetic routes for simple carbon compounds are designed. Through all course, the ability to present organic reactions for other students orally is emphasised.

Course design

The teaching is given as lectures, teacher-supervised self-study in groups and exercises.

Assessment

The course is examined by a written examination at the end of the course. A re-sit examination is offered soon after the examination to students who do not pass.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

To be awarded Pass students must pass the examination. The final grade for the course is determined by the grade of the examination.

Entry requirements

To be eligible for this course students must have basic eligibility and passes in courses equivalent to:

- KEMA00 General and Analytical Chemistry 7.5 credits, KEMA01 Organic Chemistry – Basic Course 7.5 credits, KEMA02 Inorganic Chemistry – Basic Course 7.5 and KEMA03 Biochemistry – Basic Course 7.5 credits

and

- KEMB09 Physical Chemistry – Basic Course 15 credits

Knowledge equivalent to KEMB29 Spectroscopy and Dynamics, 7.5 credits, is recommended.

Equivalent knowledge that has been gained in another way also provides eligibility for the course.

Further information

The course cannot be credited as part of a degree programme that also includes KEMB01 Organic Chemistry 15 credits or KEM012 Organic Chemistry 15 credits.

Subcourses in KEMB11, Chemistry: Organic Chemistry - Theory

Applies from H12

1201 Organic Chemistry - Theory, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction