Faculty of Science

KEMB21, Chemistry: Organic Chemistry, 15 credits

Kemi: Organisk kemi, 15 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2017-12-04 and was last revised on 2018-10-02. . The revised syllabus applied from 2018-10-02. , spring semester 2019.

General Information

The course is a compulsory first-cycle course for a degree of Bachelor of Science, main field of subject Chemistry.

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

Main field of studies	*Depth of study relative to the degree requirements*
Chemistry	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to consolidate and extend students' knowledge and skills in organic chemistry, and to provide basic skills in structure determination of carbon compounds by spectroscopic methods.

Knowledge and understanding

Upon completion of the course the student shall be able to:

- based on the basic theory of the structure and electron structure of carbon compounds explain their acid-base properties, nucleophilicity and elektrofilicity
- account for the stereochemistry of organic molecules and stereochemical concepts
- describe the basic theoretical principles of infrared spectroscopy (IR), nuclear magnetic resonance spectroscopy (NMR) and mass spectroscopy (MS)

Competence and skills

Upon completion of the course the student shall be able to:

- apply insights into the structure and electronic properties of organic compounds in combination with physical-organic concepts to predict reactivity and selectivity in organic reaction theory
- propose synthetic routes to simple carbon compounds based on the fundamental principles of synthetic strategy
- accomplish structural determination of small and medium size organic molecules based on interpretation of IR, NMR and MS data
- document, report and discuss experimentally conducted organic syntheses
- based on a laboratory description, carry out organic syntheses based on basic experimental techniques

Judgement and approach

Upon completion of the course the student shall be able to:

- evaluate the strengths and weaknesses of proposed synthetic sequences to prepare simple hydrocarbons

Course content

Lectures and seminars include chemical bonding, stereochemistry, organic reaction theory, mechanisms and selectivity of organic reactions, synthesis planning and structural analysis using spectroscopic methods. The organic chemistry comprises 7.5 credits and the section on spectroscopic methods comprises 2.5 credits.

Laboratory exercises, comprising 5 credits, designed to illustrate the theoretical content of the course and to provide a good proficiency in experimental synthesis methodology.

Course design

The teaching takes place in the form of lectures, group tutorials, and laboratory exercises. The laboratory exercises are compulsory.

Assessment

The course is assessed with written assignments covering the theoretical sections. The exam is divided into two parts, spectroscopy and organic chemistry.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

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 examinations, and pass all compulsory course elements.

The examination grades are: Fail, Pass or Pass with Distinction. Grades for laboratory work and the compulsory elements included therein are: Fail and Pass.

The final grade is determined by weighting the results of the written exams where the spectroscopic part comprises 1/3 and the organic chemistry 2/3.

Entry requirements

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

- KEMA20 General Chemistry, 15 credits; alternatively KEMA10 General Chemistry, 7.5 credits, plus KEMA12 Inorganic Chemistry – Basic Course, 7.5 credits
- KEMA01 Organic Chemistry – Basic Course, 7.5 credits
- KEMA03 Biochemistry – Basic Course, 7.5 credits

and

- KEMB09 Physical Chemistry – Basic Course, 15 credits

Further information

The course cannot be fully credited as part of a degree programme that also includes KEMB01 Organic Chemistry, 15 credits, or KEMB11 Organic Chemistry – Theory, 7.5 credits.

Subcourses in KEMB21, Chemistry: Organic Chemistry

Applies from H18

1701 Organic Chemistry, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
1702 Spectroscopy, 2,5 hp
Grading scale: Fail, Pass, Pass with distinction
1703 Organic Chemistry, Laboratory Work, 5,0 hp
Grading scale: Fail, Pass