



LUND
UNIVERSITY

Faculty of Science

KEMM12, Chemistry: Organometallic Chemistry, 15 credits

Kemi: Metallorganisk kemi, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2007-09-12 and was last revised on 2007-09-12. The revised syllabus applies from 2007-09-13, spring semester 2008.

General Information

The course is an optional second-cycle course for a degree of Master of Science in 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

A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

On completion of the course, students shall be able to

- use electron counting in assessing the reactivity and stability of organometallic compounds
- describe bond modes and determine reactivity for normally occurring ligands in organometallic complexes
- describe typical organometallic reactions, explain their mechanisms and what controls their reactivity
- describe a number of homogenous catalysis reactions in which organometallic compounds play an important role and the mechanisms of such reactions, e.g. hydrogenation, hydroformylation and polymerisation
- describe and exemplify organometallic applications within organic synthesis, e.g. olefin metathesis, cross-coupling
- apply spectroscopic methods for structural determination of simple organometallic systems

- carry out information searches in organometallic databases and organometallic primary literature

Course content

The course covers typical organometallic reactions, the use of organometallic reagents in catalysis and organic synthesis, chemical databases and the application of chemical analysis methods in organometallic chemistry. It also provides orientation about industrial applications for organometallic chemistry.

Course design

Teaching is carried out through lectures, seminars and laboratory work. Seminars, laboratory work and activities included therein are compulsory.

Assessment

The course is assessed with a written or oral examination.

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 on the whole course, students must pass the examination and pass the compulsory components.

The examination grades are: Pass with Distinction, Pass or Fail. Grades for the compulsory components are: Pass or Fail.

The final grade for the course is determined by the result of the examination.

Entry requirements

To be eligible for this course students must have basic eligibility and 90 higher education credits in completed Science courses, including 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 credits and KEMA03 Biochemistry – Basic Course 7.5 credits, or KEM101 General Chemistry 1 15 credits and KEM102 General Chemistry 2 15 credits, or KEM111 Chemistry for Environmental and Biological Sciences – General Course 1 15 credits and KEM122 Chemistry for Environmental and Biological Sciences – General Course 2 15 credits

and

- KEMB09 Physical Chemistry – Basic Course 15 credits or KEM103 General Chemistry 3 15 credits,
- KEMB01 Organic Chemistry 15 credits or KEM012 Organic Chemistry 15 credits, and
- KEMB29 Spectroscopy and Dynamics 7.5 credits and KEMB12 Inorganic chemistry 7.5 credits, or
KEMB02 Inorganic Chemistry, 15 credits or KEM113 Inorganic Chemistry 15 credits

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 KEM032 Organometallic Chemistry 15 credits.

Subcourses in KEMM12, Chemistry: Organometallic Chemistry

Applies from H13

- 0711 Organometallic Chemistry, 10,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 0712 Organometallic Chemistry, Compulsory Elements, 5,0 hp
Grading scale: Fail, Pass

Applies from H07

- 0701 Organometallic Chemistry, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 0702 Organometallic Chemistry, Compulsory Elements, 0,0 hp
Grading scale: Fail, Pass