

## KEMM42, Chemistry: Theory of Organometallic Chemistry, 10 credits

*Kemi: Metallorganisk teori, 10 högskolepoäng*  
Second Cycle / Avancerad nivå

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### Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2009-02-04 and was last revised on 2009-02-04. The revised syllabus applies from 2009-02-04, autumn semester 2009.

### 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 and seminars. Seminars 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.

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, English B 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 KEMM12 Organometallic Chemistry 15 credits or KEM032 Organometallic Chemistry 15 credits.

## Subcourses in KEMM42, Chemistry: Theory of Organometallic Chemistry

Applies from V09

0901 Theory of Organometallic Chemistry, 10,0 hp

Grading scale: Fail, Pass, Pass with distinction

0902 Theory of Organometallic Chemistry, Compulsory Elements, 0,0 hp

Grading scale: Fail, Pass