

Organic Chemistry (J000477)

Course size *(nominal values; actual values may depend on programme)*

Credits 8.0 **Study time 240 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	Dutch	Gent	lecture seminar
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Lecturers in academic year 2023-2024

Madder, Annemieke	WE07	lecturer-in-charge
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Offered in the following programmes in 2023-2024

Bachelor of Science in Pharmaceutical Sciences	8	A
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Teaching languages

Dutch

Keywords

Organic molecules / Structure / Reactivity

Position of the course

The course in Organic Chemistry introduces the basic knowledge concerning the characteristics of organic structures and the most important types of organic reactions. Emphasis is on insight in the mechanistic aspects which stimulates analytical thinking and critical reflection. This course constitutes the direct basis for the later courses in Biochemistry, Pharmacology and Medicinal Chemistry.

Contents

- Elektron configuration with focus on carbon and the correct construction of Kekulé-Lewis structures.
- Orbital overlap: the covalent bond, hybridisation and the carbon skeleton in alkanes and cycloalkanes.
- Polar covalent bonds and the functional groups based on C, H, N and O.
- Elektron delokalisation (resonance): pi-systems and aromaticity.
- Dynamic geometry and conformational analysis with focus on cyclohexane.
- Elektrophilic addition to the non-polarised pi-bond
- Stereoisomery.
- Overview of reaction types and intermediates
- Reversal of polarity (halogenated alkanes versus organometallic compounds)
- Nucleophilic substitution reactions
- Elimination reactions
- Electrophilic substitution on aromatic molecules
- Acyl substitution reactions
- Addition reactions to carbonyl compounds
- Carbonyl-alpha substitution
- Radical reactions
- Introduction to pericyclic reactions
- Redox reactions in organic chemistry

Initial competences

Final competences of secondary school or competences corresponding herewith.

Final competences

- 1 To recognize the diverse characteristics of an organic structure, more specifically the carbon skeleton and the functional groups.

- 2 To analyse the symmetry of an organic molecule.
- 3 To determine the absolute configuration of stereocentra in organic molecules.
- 4 To master mechanistic insight in the most important types of organic reactions.
- 5 To discuss the course related relevant theories and models.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture

Extra information on the teaching methods

Depending on the COVID19 measures in force, the format of the exercise seminars will be 'on campus' or online. Announcements about this will be communicated to the students via Ufora.

Learning materials and price

- Dutch syllabus (approximate price 14 €).
- English reference handbook: "Organic Chemistry", Paula Yurkanis Bruice, Pearson / Prentice Hall, 8th Ed. ISBN 9781292160450. (~80 €).
- Molecular models (~15 €)

References

English reference handbook: "Organic Chemistry", Paula Yurkanis Bruice, Pearson / Prentice Hall, 8th Ed. (~80 €).

Course content-related study coaching

Students have various options for asking questions, both individually and in group, to the lecturer or assistants: before or after classes, during theoretical and practical exercise sessions or upon appointment with the lecturer.

Students can also go to the monitoring service for extra study support, both in group (by group sessions) as well as individually by appointment with the study counselor of the Faculty of Pharmaceutical Sciences: Karen.Saerens@UGent.be.

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment with open-ended questions

Examination methods in case of periodic assessment during the second examination period

Written assessment with open-ended questions

Examination methods in case of permanent assessment**Possibilities of retake in case of permanent assessment**

not applicable

Calculation of the examination mark

Periodic evaluation for theory (40%) and exercises (60%).