Trends in Organic Chemistry (C002553)

Valid as from the academic year 2016-2017

Course Specifications

Lecturers in academic year 2017-2018
Madder, Annemieke WE07 lecturer-in-charge
Hoogenboom, Richard WE07 co-lecturer

Course offerings and teaching methods in academic year 2017-2018
A (semester 2)
lecture 30.0 h
self-reliant study activities 40.0 h
seminar 16.25 h

Offered in the following programmes in 2017-2018
Master of Science in Chemistry 6 A
Master of Science in Bioscience Engineering: Chemistry and Bioprocess Technology 6 A
Exchange Programme in Chemistry (master's level) 6 A

Teaching languages
English

Keywords
New developments and trends in organic chemistry, solid supported chemistry, diversity oriented synthesis, green chemistry, supramolecular chemistry, organocatalysis

Position of the course
The course Trends in Organic Chemistry is taught in master 1 when the student has acquired a sound basis in organic chemistry during the bachelor through the following courses: 'Introduction to organic structures' (Ba1), 'Organic chemistry: reactivity 1', 'Organic chemistry: reactivity 2', 'Organic chemistry: reactivity 3' and 'Structural analysis' (Ba2); 'Synthetic methods in Organic chemistry'(Ba3).
This course aims at allowing the students to gain insight in research related novel techniques and concepts in organic chemistry and to create a possibility to report on recent applications and new developments in academic and industrial research.

Contents
Since this course intends to offer the possibility of reporting upon the latest developments in organic chemistry, the specific content can be varied. The possibility is foreseen for a limited number of lessons given by experts in the specific area. Examples of topics that will be covered are:

- definition and historical perspective
- combinatorial synthesis in solution
- synthesis on solid support
- identification and characterisation of library members
- applications in oligopeptide and oligonucleotide synthesis, antisense/antigene strategy
- development of new drugs
- development of new materials

Supramolecular Chemistry:
- general principles of supramolecular interactions
- general principles of molecular recognition

(Approved)
• host-guest interactions
• self-assembly
• applications: molecular machines
Green Chemistry
• Solvent free reactions, ionic liquids
• green oxidation methods
• new 'green' synthetic methodologies
Organocatalysis:
• introduction to organocatalysis
• enamine, iminium en H-bond catalysis: aldolreactions, Mannich reactions, conjugated additions
• biomimetic catalysis

Initial competences
Having successfully followed:
'Introduction to organic structures' (Ba1);
'Organic chemistry: reactivity 1', 'Organic chemistry: reactivity 2', 'Organic chemistry: reactivity 3' and 'Structural analysis' (Ba2);
'Synthetic methods in Organic chemistry'(Ba3).

Final competences
1 Posses understanding of recent developments in synthetic methodology and applications of organic chemistry in academic and industrial research.
2 Posses understanding of principles and possibilities of green chemistry.
3 Work with information from internationally published scientific literature, analyse and evaluate it and summarize it in a structured way.
4 Communicate about recent developments in the specific scientific area.

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
Lecture, seminar, self-reliant study activities

Learning materials and price
English syllabus
Recent and relevant articles from the scientific literature.
Cost: 12 EUR

References
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Course content-related study coaching
-Via classroom problem solving sessions: possibility to ask for extra explanation
-Individual explanation by assistant/docent upon request
-Independent work: information about the exact objectives, help with interpretation of the scientific article

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Written examination with open questions

Examination methods in case of periodic evaluation during the second examination period
Written examination with open questions

Examination methods in case of permanent evaluation
Oral examination, assignment, report

Possibilities of retake in case of permanent evaluation
examination during the second examination period is possible

Extra information on the examination methods
Non-periodic: quotation of the produced report about the scientific article, quotation of lay-out and content of the oral presentation of the scientific article, interactive interrogation during oral presentation

(Approved)
Periodic: written examination with oral defense: 4 open questions (1 knowledge reproduction, 3 open questions).

**Calculation of the examination mark**

- Non-periodic evaluation (30%).
- Periodic evaluation (70%).