

Industrial Organic Chemistry (E725012)

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

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|---------|-----|------------|------|-------------|--------|
| Credits | 3.0 | Study time | 90 h | Contact hrs | 36.0 h |
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Course offerings and teaching methods in academic year 2018-2019

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|----------------|-------|-----------|--------|
| A (semester 1) | Dutch | lecture | 24.0 h |
| | | excursion | 12.0 h |

Lecturers in academic year 2018-2019

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|--------------------|------|--------------------|
| De Clercq, Jeriffa | TW11 | lecturer-in-charge |
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Offered in the following programmes in 2018-2019

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|--|-------|----------|
| Master of Science in Chemical Engineering Technology | crdts | offering |
| | 3 | A |

Teaching languages

Dutch

Keywords

Industrial chemistry, chemical production processes

Position of the course

The course aims at giving an overview of the chemical (organic) industry. The student must acquire insight in the structure and the specific aspects of the chemical industry. This is realised by means of an overview of the quantitatively most important industrial chemical products and their mutual relations. The student has to be capable of describing and explaining with the aid of simple flowsheets chemical production processes (consistency and objective of the different process steps) and acquires some ideas concerning project planning and process development. The student must also acquire insight in steam and use of it in technical processes. By means of visits to chemical production plants, the student is faced with the industrial chemistry in its real dimensions. The importance of chemistry in the society and the social, economic, environmental and security-aspects are in this way highlighted.

Contents

Structure of the organic industry.
Refinery of organic raw materials and different production processes (alkenes, aromatics, synthesis gas, methanol, ethylene oxide, ...).
Project planning, flowsheeting and process development.
Steam training course at Spirax-Sarco.
Guest lectures about green chemistry and amine production possible.
Maximum 3 company visits, of which normally at least one within the oleochemistry industry.

Initial competences

Course unit builds on certain learning outcomes of course unit Unit Operation of Chemical Engineering.

Final competences

- 1 Insight in the structure of the organic industry.
- 2 Interpreting, naming and explaining industrial organic production schemes and flowsheets.
- 3 Insight in the steam production and steam distribution.
- 4 Explaining how a process can be developed and planned.
- 5 Applying of chemical-technological knowledge in an industrial process framework.

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

Excursion, lecture

Learning materials and price

Syllabus (ca. 10 euro)

Steam course Spirax-Sarco

If available: powerpoint presentations of guest lectures

References

Sinnott R.K. (2005). Coulson & Richardsons Chemical Engineering Series. Volume 6, Fourth edition. Chemical Engineering Design. Elsevier Butterworth-Heinemann. ISBN 0-7506-6538-6.

Integrated Pollution Prevention and Control (IPPC), Reference Document on Best Available Techniques in the Large Volume Organic Chemical Industry (2003a). 478 p.

Integrated Pollution Prevention and Control (IPPC), Reference Document on Best Available Techniques for Mineral Oil and Gas Refineries (2003b). 518 p.

Luyben W.L. (2002). Plantwide Dynamic Simulators in Chemical Processing and Control. CRC Press. ISBN 0-8247-0801-6.

Moulijn J.A., Makkee M. en Wan Diepen A. (2001). Chemical Process Technology. John Wiley & Sons Ltd. ISBN 13:987-0-471-63062-3.

OSHA Technical Manual (1999). TED 1-015A.

Ullmann's Encyclopedia of Industrial Chemistry (2014). Wiley-VCH Verlag GmbH & Co. ISBN 9783527306732.

Weissermel K. en Arpe H.-J. (1997). Industrial Organic Chemistry. VCH Publishers. ISBN 3-527-28838-4.

Course content-related study coaching

Additional support and explanation is provided by appointment.

Evaluation methods

end-of-term evaluation

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

Written examination with open questions, oral examination

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

Written examination with open questions, oral examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Calculation of the examination mark

Periodic evaluation: 100 %