

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

Credits	5.0	Study time	140 h	Contact hrs	45.0 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	lecture	30.0 h
		excursion	15.0 h

Lecturers in academic year 2018-2019

Van Hecke, Kristof	WE06	lecturer-in-charge
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Offered in the following programmes in 2018-2019

	crdts	offering
Master of Science in Chemistry	5	A
Exchange Programme in Chemistry (master's level)	5	A

Teaching languages

English

Keywords

Industrial chemistry, process technology, chemical industry.

Position of the course

The main purpose of this course is to bring alive the concepts forming the basis of the chemical process industry by treatment of actual practical processes. It is not the intention to treat the chemical process industry in an encyclopedia way. Concepts are emphasized rather than facts. The production of chemicals entails specific solutions to problems related to transport, mixing, temperature control, etc. which are often governing the choice of certain processes over other alternatives. In addition notions of recycling, efficiency, waste products, energy consumption are determinants in industrial practice. Some insight in chemical reactors is required in order to fully appreciate industrial aspects of the production of organic as well as inorganic basic chemicals. The principles are illustrated with visits to industrial plants.

Contents

Introduction, The Chemical Industry, Chemical Processes: Synthesis of Ammonia, Processes in the Oil Refinery, Production of Synthesis Gas, Bulk Chemicals and Synthetic Fuels Derived from Synthesis Gas, Sulfur and Sulfur Compounds, Catalysis, Principles of Chemical Process Sustainability, Chemical Process Safety, Environmental Laws, Patents in the Chemical Industry

Initial competences

The students should have obtained credits for the curriculum courses: 'Chemistry I: Structure of Matter', 'Chemistry II: Changes in Matter', 'Organic Chemistry: Reactivity 1, 2 and 3' or have acquired the specific competences aimed for, via equivalent curriculum subjects, to be proven by credit(s).

Final competences

- 1 To gain knowledge of the basic industrial processes for basic organic and inorganic products.
- 2 To gain attention regarding the different aspects of process safety, sustainability and risk assessments, related to industrial processes.
- 3 Critically assessing existing and new industrial processes and models, and interpreting these with respect to the present sustainability problematics.
- 4 Linking chemistry to society, being sensitive to societal questions, concerns and innovation needs and considering these within an international context.
- 5 Mastering basic concepts, notions and theories in the chemical industry and being capable of applying these.

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

Extra information on the teaching methods

The lectures are augmented by visits to industrial plants.

Learning materials and price

Appropriate lecture notes (handouts slides) and additional information is provided by the (guest)lecturers on Minerva.

References

Course content-related study coaching

Evaluation methods

end-of-term evaluation

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

Oral examination

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

Oral examination

Examination methods in case of permanent evaluation

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

An oral exam covering the course subjects (lectures/excursions) is prepared in writing.

Calculation of the examination mark

Oral exam: 100%. A student who is absent without any well-justified reason or who does not participate in all evaluation methods of the non-periodic evaluation (company visits), will get a non-deliberable examination mark.