

Processes in Practice (I002776)

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

Credits 3.0 **Study time** 90 h

Course offerings in academic year 2023-2024

A (semester 1) English Gent

Lecturers in academic year 2023-2024

Volcke, Eveline LA24 lecturer-in-charge

Offered in the following programmes in 2023-2024

	crdts	offering
Bachelor of Science in Environmental Technology	3	A
International Master of Science in Sustainable and Innovative Natural Resource Management	3	A
Master of Science in Bioscience Engineering: Chemistry and Bioprocess Technology	3	A
Master of Science in Chemical Engineering	3	A
Master of Science in Chemical Engineering	3	A

Teaching languages

English

Keywords

process design, process diagrams, practical implementation, equipment, instrumentation, integration

Position of the course

The aim of this course is to gain insight in the design and operation of installations, for (bio) chemical production processes and/or for environmental engineering applications. An important part of the course is devoted to the interpretation of process diagrams, mainly P&IDs, as an indispensable tool for process engineers. Particular attention is paid to the practical implementation of unit processes and their integration in a larger whole, involving process engineering aspects, equipment needs, energy requirements and process control. Overall, this course enables the students to implement the physical-chemical or biological unit processes known from other courses in practice, and to integrate them in the context of larger installations.

Contents

1. Introduction to process design
2. Process diagrams
 - block flow diagrams
 - process flow diagrams
 - Piping & Instrumentation Diagrams (P&IDs)
3. Practical implementation of installations
 - case studies from environmental and chemical engineering: benzene production, wastewater treatment plants, waste incineration with energy recovery and waste gas treatment, air scrubbers, implementation and energy balance of an anaerobic digester, energy conversion processes,...
 - (virtual) site visits with special attention for equipment, instrumentation, automation and integration

Initial competences

'Processes in Practice' builds on certain learning outcomes of the course units 'Heat and mass transport', 'Thermodynamic processes', 'Process Engineering' and 'Process Control'; or the learning outcomes have been achieved differently.

Final competences

- 1 Being capable of interpreting process diagrams, in particular P&IDs
- 2 To have knowledge on the practical implementation of unit processes in the field of environmental engineering and chemical process engineering and
- 3 on their integration in a larger whole

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, seminar

Extra information on the teaching methods

Lecture
Lecture: plenary exercises
Seminar: coached exercises
Group work
Study visit

Learning materials and price

Electronically available through Ufora

References**Course content-related study coaching****Evaluation methods**

end-of-term and continuous assessment

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

Oral assessment, oral assessment open-book

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

Oral assessment, oral assessment open-book

Examination methods in case of permanent evaluation

Oral assessment, peer and/or self assessment, participation, assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Calculation of the examination mark

Non-period aligned evaluations (group work): 30% of final mark

Period-aligned evaluation: 70% of final mark

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.