GHENT UNIVERSITY

# Course Specifications

Valid as from the academic year 2025-2026

## Process Engineering (I003070)

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

**Credits 4.0** **Study time 120 h**

**Course offerings in academic year 2025-2026**

| | | |
|---|---|---|
| A (semester 2) | English | Gent |
| B (semester 2) | English | Gent |

**Lecturers in academic year 2025-2026**

| | | |
|---|---|---|
| Dewulf, Jo | LA24 | lecturer-in-charge |

| **Offered in the following programmes in 2025-2026** | **crdts** | **offering** |
|---|---|---|
| Bachelor of Science in Bioscience Engineering | 4 | A |
| Master of Science in Bioinformatics(main subject Bioscience Engineering) | 4 | A |
| Master of Science in Pharmaceutical Engineering | 5 | B |
| Exchange Programme in Bioinformatics (master's level) | 4 | A |
| Preparatory Course Master of Science in Bioinformatics(main subject Bioscience Engineering) | 4 | A |

**Teaching languages**

English

**Keywords**

Process engineering, unit operations

**Position of the course**

In this course, elements from physics, chemistry and mathematics are taken further in function of engineering education. In particular, heat and mass transfer phenomena are further employed in processes and unit operations that are relevant for the engineering workfield. To this goal, an overview of processes that are appearing in the workfield of engineers is presented, and the role these processes take in the broader context is explained. Equally, the types of processes and how to approach them from an engineering perspective are brought forward. Subsequently, specific processes are addressed. The selection of the covered unit operations is made to target those that are typically occurring in the workfield of many engineers. In the following master, complementary unit operations are covered that are more specific for some particular engineer programmes and related workfields.

**Contents**

This content is fully applicable for course offering B, while chapter 2 should not be known within course offering A.

1. Introduction:
- Example from rapeseed to biodiesel; principles and units
- Context of a unit operation: process design, the operation within a factory and the life cycle
context: its role in function of economic and environmental sustainability
2. Principles of Steady-State Heat Transfer
3. Evaporation
4. Drying of Process Materials
5. Stage and Continuous Gas-Liquid Separation Processes
6. Liquid-Liquid and Fluid-Solid Separation Processes

7. Membrane Separation Processes
8. Introduction to Mechanical-Physical Separation Processes

**Initial competences**

Process engineering builds upon several basic elements from courses in chemistry, physics, and mathematics.

**Final competences**

Understanding the principles of unit operations.
Understanding and being able to calculate the unit operations covered in the course.
Making up and calculating mass and energy balances.
Evaluation of applications of unit operations.

**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, Excursion, Lecture

**Study material**

Type: Syllabus

Name: Syllabus
Indicative price: € 15
Optional: no
Language : English
Number of Pages : 350
Available through Student Association : Yes

**References**

Transport Processes and Unit Operations C.J. Geankoplis;
Analysis, synthesis and design of chemical processes. Turton et al.

**Course content-related study coaching**

Tutoring of the course is offered to support students in processing the content in order to obtain the expected final competences.

**Assessment moments**

end-of-term assessment

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

Written assessment open-book

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

Written assessment open-book

**Examination methods in case of permanent assessment**

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

examination during the second examination period is not possible

**Calculation of the examination mark**

The exam is composed of three or four questions consisting of exercises, applications of theory and/or questions about the company visit.
Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.