

Process Technology (0000100)

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

Credits 5.0 **Study time 150 h**

Course offerings and teaching methods in academic year 2025-2026

A (semester 1)	English	Incheon	lecture seminar
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Lecturers in academic year 2025-2026

Ronsse, Frederik	LA24	lecturer-in-charge
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Offered in the following programmes in 2025-2026

Bachelor of Science in Environmental Technology	5	A
Bachelor of Science in Food Technology	5	A

Teaching languages

English

Keywords

Product transport, thermal installations, cooling and heating technology, engine and drive systems

Position of the course

The aim of this course is to educate the technical fundamentals of industrial process lines. Upon completion, the student must be capable of evaluating the technical description and details of an industrial installation. Also, the student must be capable of specifying the technical requirements of an installation. In a sense, this course is complementary to the course "Proces engineering".

Contents

1. Thermal installations
 - Steam and heating technology, heat pumps
 - Cooling technology (vapor cycle engines, absorption cooling and cooling towers)
2. Product transport
 - transport of gases (fans, blowers, compressors and turbines...)
 - transport of liquids (pumps, valves, ...)
 - transport of solid and bulk materials (pneumatic, mechanic, ...)
3. Engines and drives
 - electric motors and generators (direct current, synchronous and asynchronous alternating current, frequency control)
 - thermal engines (working principles, emissions and emission control)

Initial competences

Process Technology builds on certain learning outcomes of course units 'Electricity and magnetism' and 'Optics and Physical and Chemical Thermodynamics'; or the learning outcomes have been achieved differently.

Final competences

- 1 Insight into the inner workings of cooling machines, heat pumps, fluid transport systems, thermal engines and rotating electrical machines.
- 2 Distinguish between different types of pumps and compressors and make a well-supported selection.
- 3 Design cooling/heating cycles and predict their resulting energy efficiencies.
- 4 Evaluate a technical description and specify requirements of an (industrial) installation with respect to the unit operations of heating/cooling, pumping of

fluids and driving processes using electrical and/or thermal energy.

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, Lecture

Study material

None

References

Course content-related study coaching

The lecturer is available for additional support before or after the lectures; During the lecture weeks in which the course is organized, the lecturer is on site and an appointment can be made for additional support.

Further assistance can be offered online or through the forum on Ufora.

Assessment moments

end-of-term assessment

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

Written assessment with open-ended questions

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

Written assessment with open-ended questions

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

Written examination with open questions. The exam is closed book, but a limited list of formulas will be made available to the students, to be used for solving the exercises on the exam.

Calculation of the examination mark

The score is composed out of the following items, weight factor included:

Written examination with open questions - 100% (of which 50% is on the theory questions, and 50% the exercise questions)