

Process Technology (O000100)

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

Credits 5.0 Study time 150 h Contact hrs 45.0 h

Course offerings and teaching methods in academic year 2019-2020

A (semester 1)	English	lecture: plenary exercises	5.0 h
		lecture	25.0 h
		seminar: coached exercises	10.0 h

Lecturers in academic year 2019-2020

Ronsse, Frederik LA24 lecturer-in-charge

Offered in the following programmes in 2019-2020

	crdts	offering
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
 - 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 'Physics 3: Electricity and magnetism' and 'Physics 4: 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

Lecture, lecture: plenary exercises, seminar: coached exercises

Learning materials and price

Lecture slides, exercise slides as well as a syllabus (both in pdf format) are made available to the students.

References

Course content-related study coaching

The lecturer is available for additional support before or after the lectures; additional support can be offered through e-mail or through the forum on the electronic learning environment.

Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination with open questions

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

Written examination with open questions

Examination methods in case of permanent evaluation

Participation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

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.

Participation

Calculation of the examination mark

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

Written examination with open questions - 90% (of which 2/3 is on the theory questions, and 1/3 on the exercise questions)

Participation - 10%