

Food Processing (1002760)

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

Credits 7.0 **Study time 210 h**

Course offerings and teaching methods in academic year 2024-2025

A (semester 1)	English	Gent	seminar excursion lecture
----------------	---------	------	---------------------------------

Lecturers in academic year 2024-2025

Moens, Kim	LA23	staff member
Dewettinck, Koen	LA23	lecturer-in-charge
Ragaert, Peter	LA23	co-lecturer

Offered in the following programmes in 2024-2025

	crdts	offering
Master of Science in Food Technology	7	A
Exchange Programme in Bioscience Engineering: Food Science and Nutrition (master's level)	7	A

Teaching languages

English

Keywords

Food, technology, unit operations, quality, safety, shelf life, sensorial properties, nutritional value, packaging, sustainability

Position of the course

The most important unit operations applied in the food industry are discussed. In particular attention is paid to the influence of applied unit operations on food quality aspects safety, convenience, sensory quality and nutritional value and their integration in sustainable food production.

Contents

Part 1: Unit processes and their influence on safety, convenience, sensory quality, nutritional value and sustainability.

- Unit operations in a sustainable food system
- Technical thermodynamics and heat transfer (+ exercises)
- Destruction of microorganisms (+ exercises)
- Heat treatments
- Moist air conditions (+ exercises)
- Low temperature preservation (+ exercises)
- Freezing (+ exercises)
- Separation techniques (+ exercises)
- Drying (+ exercises)
- Baking, roasting and frying
- Emerging technologies

Part 2: Food packaging

- Functions of food packaging
- Overview of packaging materials
- Filling systems for solid and liquid food products
- Modified atmosphere packaging
- Food packaging in a circular economy

Initial competences

Final competences

- 1 Understand unit operations and their combinations applied in food industry.
- 2 Evaluate the impact of unit operations on food quality in a wide sense.
- 3 Understand the different factors that influence the performance of packaging materials for food products.
- 4 Gain insight in the interaction between food properties, packaging materials and filling systems.
- 5 Apply calculation methods to 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

Extra information on the teaching methods

- Students follow theoretical lectures about unit operations and packaging. Slides are available as study material.
- Students are guided by a teaching assistant for solving exercises about unit operations.

Study material

Type: Handbook

Name: Introduction to food engineering
Indicative price: Free or paid by faculty
Optional: no
Language : English
Author : SINGH, R.P. & HELDMAN, D.R.
ISBN : 978-0-12398-530-9
Number of Pages : 867
Online Available : Yes
Available in the Library : Yes
Additional information: <https://lib.ugent.be>

Type: Handbook

Name: Food processing technology, Principles and practice
Indicative price: Free or paid by faculty
Optional: no
Language : English
Author : FELLOWS, P.J.
ISBN : 978-0-08100-523-1
Number of Pages : 1226
Online Available : Yes
Available in the Library : Yes
Additional information: <https://lib.ugent.be>

Type: Slides

Name: Slides exercises
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes
Online Available : Yes

Type: Slides

Name: Slides theoretical lectures
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes
Online Available : Yes

References

Food Processing

- SINGH, R.P. & HELDMAN, D.R. (2014). Introduction to food engineering (Fifth Edition). San Diego. Academic Press Inc., 867 p. ISBN 978-0-12-398530-9
- FELLOWS, P.J. (2016). Food processing technology, Principles and practice (Fourth edition). Cambridge, Woodhead Publishing Limited and CRC Press LLC, 1226 p. eBook ISBN 9780081005231

Food Packaging

- Morris, S.A. (Ed.). (2011). Food and package engineering. Wiley-Blackwell, West Sussex. ISBN 978-0-8138-1479-7.
- Robertson, G.L. (Ed.) (2013). Food Packaging. Principles and Practice. Third Edition. Taylor & Francis, Boca Raton. ISBN 978-1-4398-6241-4.
- Thielen, M. (Ed.) (2012). Bioplastics – Basics, applications, markets. Polymedia Publisher GmbH, Mönchengladbach. ISBN 978-3-9814981-1-0

Course content-related study coaching

Possibility to consult the lecturers or teaching assistants after the theoretical lectures or exercises or on appointment.

The exercises are guided by a teaching assistant.

Assessment moments

end-of-term assessment

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

Written assessment with multiple-choice questions, Written assessment with open-ended questions

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

Written assessment with multiple-choice questions, Written assessment with open-ended questions

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

Periodic evaluation:

- The theory is assessed by a written examination with multiple choice questions (closed book)
- The exercises are assessed by a written examination for which a formulary is available

Calculation of the examination mark

- The theory contributes for 60% to the final mark and is evaluated by a closed book, multiple choice examination
- The exercises contribute for 40% to the final mark and are evaluated by a closed book exam with open questions with the use of a formulary