GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Food Packaging Materials, Machines and Conditions (I690016)

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	Kortrijk	excursion	0.0h
			independent work	0.0h
			lecture	0.0h
			seminar	0.0h

Lecturers in academic year 2024-2025

Ragaert, Peter	LA23	lecturer-in-charge
Peeters, Roos	LA23	co-lecturer
Sampers, Imca	LA23	co-lecturer

Offered in the following programmes in 2024-2025	**crdts**	**offering**
Postgraduate Certificate Food Packaging	7	A
Postgraduate Certificate Sustainable Food Packaging Solutions	7	A

Teaching languages

English

Keywords

Packaging materials, packaging equipment, packaging conditions, hygienic design, packaging engineering, barrier properties, sealing properties, active and intelligent packaging, biobased & compostable packaging

Position of the course

This course provides knowledge and insights on three key aspects within food packaging: 1) materials used for packaging focusing on functionality and production techniques; 2) filling machines for food and beverages and 3) filling conditions including hygienic design and guidelines. This course also zooms in on recent advances and trends in food packaging such as active and intelligent packaging and biobased and compostable packaging.

Contents

1. Overview of packaging materials
a. Glass
b. Metal
c. Paper
d. Plastics
2. Functionality of packaging materials
a. Permeability
b. Sealability
c. Thermal properties
d. Mechanical properties
e. Other properties (e.g. anti-fog, transparency)
3. Packaging engineering: production and functionalisation of packaging materials
a. Extrusion and co-extrusion
b. Lamination
c. Thermoforming
d. Injection Blow Moulding

e. Orientation
f. Coating techniques:
f.i. Metallization
f.ii. Ceramic coatings (AlOx, SiOx)
f.iii. Coatings on paper
g. Susceptor technology
4. Adhesive and printing processes
a. Adhesive processes
b. Printing processes
c. Shrink sleeves
d. In-mould labelling
5. Packaging equipment and conditions
a. Type of equipment: both for food and beverages
b. Type of conditions: clean, ultraclean, aseptic
c. Hygienic design
d. Leak detection technology
6. Active & intelligent packaging
a. Active packaging
b. Intelligent packaging
7. Biobased and compostable plastics

Initial competences

Basic knowledge of organic chemistry is recommended

Final competences

1 To be able to understand processes that give packaging materials the required functionality.
2 To explain the different factors that influence the performance of packaging materials for food products.
3 To gain insight in the interaction between food products, packaging materials, packaging equipment and packaging conditions.
4 To determine the appropriate packaging configuration taking into account gas barriers.
5 To collect up-to-date and evidence-based information on the structure, processing and usage of packaging materials for food products.
6 To gain insights in the multidisciplinary framework of food packaging and in the complexity and interactions within the packaging chain.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Excursion, Lecture, Independent work

Extra information on the teaching methods

Lectures include guest lectures from companies to share their developments or insights on specific packaging topics. A selection of these lectures could take place online.
Seminars focus on simulating oxygen ingress in food packaging.
Excursion includes company visits (not obligatory).
Independent work: in the framework of the assignment, the students should gather relevant information enabling them to identify the packaging configuration of the selected packaged food product.

Study material

Type: Slides

Name: Food Packaging Materials
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes

Online Available : No
Available in the Library : No
Available through Student Association : No

References

Robertson, G.L. (Ed.) (2013). Food Packaging. Principles and Practice. Third Edition. Taylor & Francis, Boca Raton. ISBN 978-1-4398-6241-4.
Handbook of Hygiene Control in the Food Industry; Edited by Huub Lelieveld, John Holah and Domagoj Gabric, 756 p., 9780081001554.
Hygienic design of food factories; Edited by John Holah, Huub Lelieveld; 824 p., 9781845695644.

Course content-related study coaching

Student counselling is foreseen 1) during or after theoretical sessions, 2) during or after practical sessions and 3) by means of e-mail or personal meeting.

Assessment moments

end-of-term and continuous assessment

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

Assignment

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

Assignment

Examination methods in case of permanent assessment

Participation

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

Assignment: the evaluation of this course is part of an individual integrative assignment in which students have to integrate and apply knowledge and competences from all the different courses making up the specific elective track of the postgraduate certificate Food Packaging.
The student (qualitatively) evaluates a food product-packaging concept. The product-packaging concept will be predetermined before the start of the lectures.
The student should demonstrate s/he is able to apply the course in an interdisciplinary way, and explain the concept from a course specific perspective.
The product of the assignment is a report (including a self-reflection) which will be presented to a jury.
The participation includes making and submitting the simulation exercises.

Calculation of the examination mark

Participation (0.5/20)
- Predoxypack exercises

The assignment (19.5/20):
- Report (40%)
- Presentation (20%)
- Q&A (40%)