

Quality of Packed Food Products (I690018)

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

Credits 6.0 **Study time 180 h**

Course offerings in academic year 2024-2025

A (semester 1) English Kortrijk

Lecturers in academic year 2024-2025

Devlieghere, Frank	LA23	lecturer-in-charge
De Meulenaer, Bruno	LA23	co-lecturer

Offered in the following programmes in 2024-2025

	crdts	offering
Postgraduate Certificate Food Packaging	6	A
Postgraduate Certificate Sustainable Food Packaging Solutions	6	A

Teaching languages

English

Keywords

Food chemistry, food microbiology, food preservation, food spoilage, nutritional value, shelf life, packaging

Position of the course

In this course the various - microbiological, physiological, chemical and physical - phenomena leading to deterioration of packed foods will be presented, with a special focus on the role of packaging. Topics include basic aspects of food microbiology (microbiological aspects of food preservation with a special focus on how packaging influences the microbial behaviour [spoilage micro-organisms as well as food pathogens]) and food chemistry (the study of the chemical, biochemical and physicochemical processes involved in agricultural raw materials and in foodstuffs, and during the transformation of agricultural raw materials into derived products). Considering the main constituents of foods, a selection of chemical and physicochemical properties will be discussed relevant for packed foods. Special attention is given to the kinetics of shelf life determining factors.

Contents

1. Introduction: food quality and safety as determinants for shelf life of packed foods

Part 1: Chemical-physical aspects

2. Water as determinant for shelf life of packed foods
3. Lipids as key compounds causing rancidity
4. Proteins as receptors for reactive carbonyls impact quality of packed foods
5. Enzymatic reactions relevant for packed foods
6. Pivotal minor substances in packed foods: vitamins and pigments (and aroma compounds)

Part 2: Microbiological and physiological aspects

7. Microbial spoilage of packaged food products
8. Microbial safety aspects determining the shelf life of packaged products
9. Intrinsic and extrinsic factors influencing the microbial shelf life of packed foods
10. Atmosphere as determinant for microbial and physiological shelf life of packed foods

Part 3: Shelf life determination

11. Chemical shelf life determination and modelling
12. Microbiological shelf life determination and modelling

Initial competences

Basic general and organic chemistry, biochemistry, general microbiology, basic aspects of modelling.

Final competencies obtained in the course unit 'Food packaging materials, machines and conditions'.

Final competences

- 1 To identify the factors which determine the shelf life of foods.
- 2 To describe the parameters of the phenomena determining the shelf life of foods.
- 3 To describe the impact of the packaging system on the shelf life of foods.

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

Lecture, Independent work

Extra information on the teaching methods

Lectures: 30 hrs

Lectures: plenary exercises: 10 hrs: modelling of shelf life of packed food products.

Guided self-study: 20 hrs: gather relevant information in the framework of the assignment

Study material

Type: Slides

Name: Slides Shelf life of packed foods

Indicative price: Free or paid by faculty

Optional: no

Language : English

References

Modern Food Microbiology (J. Jay)

Food Chemistry (Belitz)

Fennema's Food Chemistry (S. Damodaran, K. L. Parkin)

Food packaging and shelf life. A practical Guide (G.L. Robertson)

Course content-related study coaching

Before and after the lectures and exercises, the student can ask the teacher or assistant for additional information or explanation. The teacher and assistant can also be contacted by e-mail.

Assessment moments

end-of-term 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

Possibilities of retake in case of permanent assessment

not applicable

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.

Calculation of the examination mark

The assignment:

- Report (40%)
- Presentation (20%)
- Q&A (40%)