

## 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**

[Postgraduate Certificate Food Packaging](#)

**crdts**

6

**offering**

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%)