

Quality Management in Food Packaging (I690012)

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

Credits 4.0 **Study time 120 h**

Course offerings and teaching methods in academic year 2024-2025

A (Year)	English	Kortrijk	group work
			practical
			excursion
			lecture

Lecturers in academic year 2024-2025

Jacxsens, Liesbeth	LA23	lecturer-in-charge
Buntinx, Mieke	TW56	co-lecturer
Peeters, Roos	TW56	co-lecturer

Offered in the following programmes in 2024-2025

Master of Science in Sustainable Food Packaging	crdts	offering
	4	A

Teaching languages

English

Keywords

Quality management – certification – quality control – quality assurance – sampling plans
Physical-mechanical characterisation of different packaging materials and packaging concepts

Position of the course

Quality management in food packaging is an advanced course to be able to set up a quality management system, dealing with multiple perspectives of the definition of quality (e.g. safety, customer requirements, sustainability, physical-mechanical characterisation etc.) towards a Total Quality Management System. Different standards applied in production and trade of food contact materials are discussed (e.g. BRC, ISO). Building blocks in quality management as traceability, good practices, quality assurance and quality control (including product and process control, sampling plans) are explained. Physical-mechanical packaging material/concepts characterisation are technically explained as how to measure quality of materials. Technical quality of paper, cardboard and plastic packaging materials/concepts are studied in a practical environment. Packaging requirements regarding packaging waste are also discussed in the context of the new packaging and packaging waste regulation (PPWR).

Contents

- PART I: Quality management systems related to packaging
1. Definitions and building blocks in quality and quality management, total quality management
 2. Certification standards applied in QMS of packaging materials production and trade (e.g. ISO, BRC)
 3. Traceability of food contact materials and packaging materials
 4. Good practices, Hazard Analysis and Risk assessment (HARA), Quality control and assurance activities in a Total Quality Management System for packaging materials
 5. Case studies on fulfilling requirements of standards (guided exercises)
 6. Theory on sampling plan (product and process control) and exercises (guided exercises)
- PART II: Physical-mechanical packaging material/concepts characterisation
7. European standards for packaging requirements related to packaging waste
 8. Gas permeability

9. Plastics characterisation
10. Seal performance
11. Paper and cardboard characterisation
12. Conditioning and transport simulation

PART III: Mechanical and climatological influences on packaging during transport and storage

Initial competences

Competences obtained in the previous course unit 'Food Packaging Systems: materials, equipment and packaging conditions' (insight in the properties, production and logistics of packaging material, legal requirements of packaging materials)

Final competences

- 1 Apply the principles of a quality management system for packaging material production
- 2 Analyse the building blocks of a quality management system (good practices, QC and QA activities)
- 3 Apply the principles of a sampling plan for product and process control
- 4 Evaluate the principles in most important standards and certification scheme related to production and trade of packaging materials
- 5 Evaluate the standards in packaging material characterisation
- 6 Select appropriate test equipment, test methods and test conditions for the characterisation of packaging materials
- 7 Analyse tests for packaging material/concept characterisation
- 8 to communicate validated conclusions based on critical reflection and supported by scientific explanation
- 9 Can look up recent legislation regarding the new packaging and packaging waste regulation.

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

Group work, Excursion, Lecture, Practical

Extra information on the teaching methods

PART I : Quality management systems related to packaging (18h)

Lectures (can be online): 9 hrs

- Definitions and building blocks in quality and quality management, total quality management
- Certification standards applied in QMS of packaging materials production and trade (e.g. ISO, BRC)
- Good practices (incl. Traceability), Quality control and assurance activities in a Total Quality

Management System for packaging materials (online – lecture) – 3h

Lecture : plenary exercises: 7 hrs:

- Case studies on fulfilling requirements of standards
- Theory and Exercises on sampling plan (product and process control)

Demonstration: 2 hrs: Invited speaker to illustrate QMS in packaging materials in practice

PART II: Physical-mechanical packaging material/concept characterisation (22h)

Lectures (can be online): 5 hrs

- European standards for packaging requirements related to packaging waste
- Introduction to practicals and group task

Group task (1hr): the processing of a standard in a workable method.

Practicals (in MPR&S): 16 hrs

- Gas permeability
- Plastics characterisation
- Seal performance
- Paper and cardboard characterisation
- Conditioning (T, RV and light) and transport simulation

PART III: Mechanical and climatological influences on packaging during transport and storage

Study visit BVI (4h)

Study material

Type: Slides

Name: Quality Management in Food Packaging

Indicative price: Free or paid by faculty

Optional: no

Language : English

Available on Ufora : Yes

Type: Excursion

Name: Lab days in UHasselt and visit to BVI

Indicative price: € 60

Optional: no

Additional information: Costs are for transport to UHasselt and Zellik (BVI). Hotel costs in Hasselt is carried by the university

References

- ISO9000:2018
- BRC IOP packaging
- Auto control guide FEVIA-FAVV regarding food contact materials

Course content-related study coaching

Students can ask additional information during the interactive lab sessions; the teachers can also be contacted by email.

Assessment moments

end-of-term and continuous assessment

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

Written assessment with open-ended questions

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

Written assessment with open-ended questions

Examination methods in case of permanent assessment

Participation, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

Part I: period-aligned: written exam with open questions (50%).

Part II: non-period aligned (50%):

- PART II-A: 10%: Assignment related to the new PPWR (guided by Prof. Mieke Buntinx)
- PART 2-B: 40%: Lab days MPR&S (guided by Prof. Roos Peeters)
 - 10%: Participation and behavior with an interested and critical attitude are evaluated during the lab days in MPR&S. Participation in 2 lab days is compulsory. Unjustified absence from the practical gives rise to a mark of 0/20. Justified absence from the practical results in a substitute assignment.
 - 30%: Lab reports of analyses on plastics and corrugated board are individually made and individually evaluated. Important aspects are: information of test equipment and work methods, description and discussion of test results, critical reflection on impacts of parameters of influence, formulating links between results of different analyses to explain differences in material properties,

Calculation of the examination mark

Part I: 50%

Part II: 50%: PART II-A: 10%; PART II-B: 40%

The student needs to participate in all assignments and exams that are part of the evaluation (period aligned and non-period aligned). Students who eschew period aligned and/or non-period aligned evaluations for this course unit, or when one obtains a score lower than 8/20 (not rounded up) on one of both parts (period aligned or nonperiod aligned evaluation or PART I and PART II as defined above), they will fail for this course unit. In that case the end score is set to 7/20 even when the calculation indicates a point of 10/20 or more.

