

## Sustainability in Food Systems: Theory and Concepts (I690022)

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

**Credits 4.0**

**Study time 120 h**

**Course offerings in academic year 2024-2025**

A (semester 1)

English

Kortrijk

**Lecturers in academic year 2024-2025**

Huysveld, Sophie

LA24

lecturer-in-charge

Cadena Martinez, Erasmo

LA24

co-lecturer

Dewulf, Jo

LA24

co-lecturer

**Offered in the following programmes in 2024-2025**

[Postgraduate Certificate Food Packaging](#)

**crdts**

4

**offering**

A

[Postgraduate Certificate Sustainable Food Packaging Solutions](#)

4

A

**Teaching languages**

English

**Keywords**

Sustainability, systems thinking, production and consumption, sustainable technology, life cycle thinking

**Position of the course**

This course focuses on the sustainability (assessment) of technological operations (human activities) and how to make them more sustainable from an environmental perspective. Also economic and social aspects are considered. Special attention is paid to food and food packaging systems, and on how the choice of production technology, ingredients, efficiency, logistics and avoidance of food waste contribute to a sustainable food system.

**Contents**

- Introduction on sustainable development, sustainability challenges, sustainable production and consumption
- Technology and sustainability
- The natural environment: resource base and sink for emissions
- Metabolism of anthroposphere (incl. circular economy)
- Life cycle sustainability assessment

**Initial competences**

Students are expected to have a scientific background at a university level (physics, chemistry, life sciences) and basic engineering skills (such as unit conversions, mass and energy balances).

**Final competences**

- 1 Students have knowledge of the environmental, social and economic sustainability challenges.
- 2 Students have knowledge of the meaning of systems thinking and are able to illustrate its importance for food systems with concrete examples.
- 3 Students can explain the concept 'sustainable development' and can place it in the context of the different stakeholders of food systems.
- 4 Students can explain how resource consumption and emissions from technological operations affect environmental sustainability of food systems.
- 5 Students have knowledge of concepts: clean technology, industrial ecology, circular economy and life cycle thinking.
- 6 Students can apply life cycle thinking when analyzing the sustainability of technological

operations in food systems.

7 Explain the challenges of prospective sustainability assessment of technological operations.

8 Distinguish environmental, economic and social effects of technological operations in food systems.

#### **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**

Group work, Lecture

#### **Extra information on the teaching methods**

Lectures (can be online) Theory and guest speaker from industry.

Group work (can be online).

#### **Study material**

None

#### **References**

Scientific literature available on this topic and the results of in-house research.

#### **Course content-related study coaching**

Before and after the lectures, the student can ask the teacher or assistant for additional information or explanations. 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**

Students who eschew one or more parts of the evaluation may be failed by the examiner.

The end-of-term evaluation (100%): the assignment

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