

## Food Technology (I002669)

**Cursusomvang** *(nominale waarden; effectieve waarden kunnen verschillen per opleiding)*

**Studiepunten 5.0** **Studietijd 150 u**

**Aanbodsessies en werkvormen in academiejaar 2024-2025**

A (semester 1)	Engels	Gent	hoorcollege zelfstandig werk werkcollege
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**Lesgevers in academiejaar 2024-2025**

Dewettinck, Koen	LA23	Verantwoordelijk lesgever
Moens, Kim	LA23	Medewerker
Van Bockstaele, Filip	LA23	Medelesgever

**Aangeboden in onderstaande opleidingen in 2024-2025**

	stptn	aanbodsessie
<a href="#">Master of Science in de bio-ingenieurswetenschappen: levensmiddelenwetenschappen en voeding</a>	5	A
<a href="#">Uitwisselingsprogramma bio-ingenieurswetenschappen: Food Science and Nutrition (niveau master-na-bachelor)</a>	5	A

**Onderwijstalen**

Engels

**Trefwoorden**

Food, technology, unit operations, processing, quality, safety, shelf life, sensorial properties, nutritional value, sustainability

**Situering**

The most important unit operations applied in the food industry are discussed. In particular attention is paid to the influence of applied unit operations on food quality aspects safety, nutritional value, convenience and sensory quality and their integration in sustainable food production.

**Inhoud**

**Part 1: Unit processes and their influence on safety, nutritional value, convenience, sensory quality and sustainability**

- Unit operations in a sustainable food system
- Destruction of microorganisms (+ exercises)
- Heat treatments
- Low temperature preservation (+ exercises)
- Freezing (+ exercises)
- Separation techniques (+ exercises)
- Drying (+ exercises)
- Baking, roasting, frying
- Emerging technologies

**Part 2: Food structuring**

- Extrusion and shear
- Emulsification
- Dispersing
- Foaming
- Additive manufacturing
- Microencapsulation

**Begincompetenties**

Food technology builds on certain learning outcomes of the course units food chemistry, thermodynamics, heat and mass transport; or the learning outcomes are acquired in a different way.

Basic knowledge of MatLab is recommended.

### **Eindcompetenties**

- 1 Explain unit operations and their combinations applied in food industry
- 2 Evaluate the impact of these unit operations on food quality in a wide sense
- 3 Apply calculation methods to unit operations
  
- 4 Obtain and critically evaluate information about unit operations applied in food industry
- 5 Design a sustainable production process of a food product by optimization of its quality in a wide sense and aiming at the desired product objectives
- 6 Present and defend the choices made regarding the production of a food product
- 7 Critically evaluate the task of a peer by feedback and feedforward on a selected case study
- 8 Identify the major drivers in society that effect food formulation

### **Creditcontractvoorwaarde**

Toelating tot dit opleidingsonderdeel via creditcontract is mogelijk mits gunstige beoordeling van de competenties

### **Examencontractvoorwaarde**

Dit opleidingsonderdeel kan niet via examencontract gevolgd worden

### **Didactische werkvormen**

Werkcollege, Hoorcollege, Zelfstandig werk

### **Toelichtingen bij de didactische werkvormen**

- Students follow theoretical lectures about unit operations and food structuring. Slides are available as study material
- Students are guided by a teaching assistant for solving computer exercises.
- Students have to make an independent work about the production process of a food product. This task is spread over 12 weeks and 3 intermediate feedback moments are foreseen. These feedback moments include written feedback by the teaching assistant, peer feedback and group discussion in smaller groups of students.

### **Studiemateriaal**

Type: Handboek

Naam: Introduction to food engineering  
Richtprijs: Gratis of betaald door opleiding  
Optioneel: nee  
Taal : Engels  
Auteur : SINGH, R.P. & HELDMAN, D.R.  
ISBN : 978-0-12398-530-9  
Aantal pagina's : 867  
Online beschikbaar : Ja  
Beschikbaar in de bibliotheek : Ja  
Bijkomende info: <https://lib.ugent.be>

Type: Handboek

Naam: Food processing technology, Principles and practice  
Richtprijs: Gratis of betaald door opleiding  
Optioneel: nee  
Taal : Engels  
Auteur : Fellows, P.J.  
ISBN : 978-0-08100-523-1  
Aantal pagina's : 1226  
Online beschikbaar : Ja  
Beschikbaar in de bibliotheek : Ja  
Bijkomende info: <https://lib.ugent.be>

Type: Slides

Naam: Slides exercises  
Richtprijs: Gratis of betaald door opleiding  
Optioneel: nee  
Taal : Engels  
Beschikbaar op Ufora : Ja

Online beschikbaar : Ja

Type: Slides

Naam: Slides theoretical lectures

Richtprijs: Gratis of betaald door opleiding

Optioneel: nee

Taal : Engels

Beschikbaar op Ufora : Ja

Online beschikbaar : Ja

### Referenties

- SINGH, R.P. & HELDMAN, D.R. (2014). Introduction to food engineering (Fifth Edition). San Diego. Academic Press Inc., 867 p. ISBN 978-0-12-398530-9
- Fellows, P.J. (2016). Food processing technology, Principles and practice (Fourth edition). Cambridge, Woodhead Publishing Limited and CRC Press LLC, 1226 p. eBook ISBN 9780081005231
- Riaz, Mian N. & Rokey, Galen J. (2012). Extrusion problems solved : food, pet food and feed Cambridge : Woodhead Pub., 154 p. ISBN 9780857095206

### Vakinhoudelijke studiebegeleiding

Possibility to consult the lecturers or teaching assistants before and after the lectures as well as on appointment. The exercises are guided by a teaching assistant. Intermediate feedback about the independent work is provided by the teaching assistant.

### Evaluatiemomenten

periodegebonden en niet-periodegebonden evaluatie

### Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Mondelinge evaluatie, Schriftelijke evaluatie met meerkeuzevragen, Schriftelijke evaluatie met open vragen

### Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Mondelinge evaluatie, Schriftelijke evaluatie met meerkeuzevragen, Schriftelijke evaluatie met open vragen

### Evaluatievormen bij niet-periodegebonden evaluatie

Participatie, Werkstuk

### Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is enkel mogelijk in gewijzigde vorm

### Toelichtingen bij de evaluatievormen

#### Periodic evaluation:

- The theory is assessed by a written examination with multiple choice questions and open questions (closed book).
- During the oral examination, the students present their task followed by a discussion with the lecturers.

**Permanent evaluation:** The lecturers evaluate the final report of the task and the participation during the progress of the task (peer-evaluation, group discussion and engagement to deadlines). The exercises are evaluated as a part of this task.

### Eindscoreberekening

- The theory contributes for 50% to the final mark and is evaluated by a closed book examination with multiple choice questions and open questions.
- The task contributes for 50% to the final mark. This is a combination of participation during task feedback, evaluation of the final report and the oral examination. The exercises are evaluated as part of this task in both the final report as well as during the oral examination. Students who escew periodic (written or oral examination) and/or permanent evaluations (final task report and participation) cannot pass the exam. If the final mark is still 10/20 (or higher), the mark is reduced to 9/20. Students who have less than 10/20 for at least one of the evaluation parts (theory or task) cannot pass for this course. If the final mark is still 10/20 (or higher), the mark is reduced to 9/20.

