



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

Studiepunten 5.0 Studietijd 135 u Contacturen 60.0 u

Aanbodssessies en werkvormen in academiejaar 2017-2018

A (semester 1)	Engels	zelfstandig werk	8.75 u
		werkcollege: geleide oefeningen	12.5 u
		begeleide zelfstudie	12.5 u
		hoorcollege	22.5 u

Lesgevers in academiejaar 2017-2018

Dewettinck, Koen	LA23	Verantwoordelijk lesgever
Ragaert, Peter	LA23	Medelesgever

Aangeboden in onderstaande opleidingen in 2017-2018

	stptn	aanbodssessie
Master of Science in de bio-ingenieurswetenschappen: chemie en bioprocestechnologie	5	A
Master of Science in de bio-ingenieurswetenschappen: levensmiddelenwetenschappen en voeding	5	A

Onderwijstalen

Engels

Trefwoorden

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

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 in a wide sense.

Inhoud

Part 1: Unit processes

1. Heat transfer (considered as initial competence)
2. Destruction of microorganisms (exercises)
3. Heat treatments
4. Moist air conditions (exercises)
5. Low temperature preservation (exercises)
6. Freezing (exercises)
7. Evaporation (exercises)
8. Drying (exercises)
9. Baking, roasting, frying and extrusion
10. High-pressure processing
11. Minimal processing methods
12. Irradiation, microwave heating

Part 2: Food packaging

1. Introduction: Function of packaging
2. Packaging materials
3. Packaging systems
4. Modified atmosphere packaging
5. Safety of packaging materials

Begincompetenties

Basic knowledge in food chemistry. Knowledge about heat transfer processes.

Eindcompetenties

- 1 Understand unit operations and their combinations applied in food industry
- 2 Gain insight in unit operations and their combinations applied in food industry
- 3 Be aware of the impact of these unit operations on the quality of food products in a wide sense

- 4 Perform calculations on unit operations
- 5 Collect information about unit operations applied in food industry
- 6 Analyze information about unit operations applied in food industry
- 7 Critically apply gathered information on a selected case study
- 8 Integrate the gathered information on a selected case study in a written format
- 9 Present the case study in a clear and concise way
- 10 Critically evaluate the task of a peer by feedback and feedforward on a selected case study
- 11 Understand the different functions and compositions of packaging materials for food products
- 12 Gain insight in the interaction between food properties, packaging materials and filling systems

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

Begeleide zelfstudie, hoorcollege, zelfstandig werk, werkcollege: geleide oefeningen

Toelichtingen bij de didactische werkvormen

The theory is given by means of lectures. Slides are available as study material. During the exercises students have time to solve the problems individually or in group. Afterwards the solution is given for the whole group by the teacher or by a student. Students have to make an integrated task covering unit processes necessary to produce a food product. During the semester, the progress is evaluated by teaching assistants and feedback and feed forward is given by peers. The students need to present their case study in a clear and concise presentation.

Leermateriaal

The course slides are available on Minerva.
Optional handbook available (hard or soft copy)

Referenties

Food Processing

- 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. (2011). Food processing technology, Principles and practice (Third edition). Cambridge, Woodhead Publishing Limited and CRC Press LLC, 913 p. ISBN 978-1-4398-0821-4

Food Packaging

- AHAVENAINEN, R. (2003). Novel Food Packaging Technologies. Woodhead Publishing Limited, Cambridge, ISBN 1-85573-675-6
- Air Products. A fresh approach to modified atmosphere packaging (MAP).
- BOSSET, J.O., GALLMAN, P.U., SIEBER, R. (1994) Influence of light transmittance of packaging materials on the shelf-life of milk and dairy products - a review. In: Mathlouthi, M. Food Packaging and preservation. Blackie Academic & Professional, London. ISBN 0-7514-0182-X
- COLES, R., McDOWELL, D., KIRWAN, M.J. (2003). Food Packaging Technology, Blackwell Publishing, Oxford. ISBN 1-84127-220-5.
- KERRY, J.P., O'GRADY, M.N., HOGAN, S.A. (2006). Past, current and potential utilisation of active and intelligent packaging systems for meat and muscle-based products: a review. Meat Science 74, 113-130.
- OZDEMIR, M. & FLOROS, J.D. (2004). Active Food Packaging Technologies. Critical Review in Food Science and Nutrition, 44, 185-193.
- Packaging Europe, 2007. Volume 2.2, 2.3 and 2.5.
- ROBERTSON, G.L. (2006). Food Packaging. Principles and Practice. Second Edition. Taylor & Francis, Boca Raton. ISBN 0-8493-3775-5
- Soft Drinks International. May 2007.
- VICKERS, F.G. & MEDLING, J. (2005). Filling equipment. In Senior, D. & DEGE, N. Technology of bottled water. Blackwell Publishing, Oxford, ISBN 1-4051-2038-X

Vakinhoudelijke studiebegeleiding

Possibility to consult a teacher or his collaborators after the theoretical lectures or exercises, on appointment.

The (practical) exercises are guided by a teaching assistant.

Evaluatiemomenten

periodegebonden en niet-periodegebonden evaluatie

Evaluatievormen bij periodegebonden evaluatie in de eerste examenperiode

Schriftelijk examen met open vragen, openboekexamen

Evaluatievormen bij periodegebonden evaluatie in de tweede examenperiode

Schriftelijk examen met open vragen, openboekexamen

Evaluatievormen bij niet-periodegebonden evaluatie

Mondeling examen, participatie, werkstuk, peer-evaluatie

Tweede examenkans in geval van niet-periodegebonden evaluatie

Examen in de tweede examenperiode is enkel mogelijk in gewijzigde vorm

Toelichtingen bij de evaluatievormen

PE1 and PE2: The theory is assessed by a written examination (closed book). The exercises and calculations are assessed by a written examination for which a formulary is available.

NPE: the task is evaluated by the teachers and by peer evaluation. Students should present their work in a concise and clear presentation. Participation during exercises and practical sessions is evaluated by presence and commitment.

Eindscoreberekening

Theory (45%) - Exercises (15%) -Task (40%)

Students who eschew periodic and/or permanent evaluations for this course may be failed by the examiner.