



Course Specifications

Valid as from the academic year 2016-2017

Food Technology (O000104)

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

Credits 5.0 **Study time** 150 h **Contact hrs** 60.0 h

Course offerings and teaching methods in academic year 2016-2017

A (semester 1)	lecture	22.5 h
	practicum	22.5 h
	seminar: coached exercises	10.0 h
	guided self-study	5.0 h

Lecturers in academic year 2016-2017

Varzakas, Theo KR01 lecturer-in-charge

Offered in the following programmes in 2016-2017

Bachelor of Science in Food Technology	crdts	offering
	5	A

Teaching languages

English

Keywords

Food, Technology, Unit operations, Processing, Quality, Safety, Shelf life, Sensorial properties, Nutritional value, Packaging

Position of the course

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.

Contents

1. Food quality
2. Reception and preparation of raw materials
 - 2.1. Cleaning
 - 2.2. Sorting
 - 2.3. Grading
 - 2.4. Peeling
 - 2.5. Other techniques
3. Processes based on heat transfer
 - 3.1. Introduction
 - 3.2. Heat production
 - 3.3. Heat transfer in food processing
 - 3.4. Applications of steady-state heat transfer
 - 3.5. Unsteady-state heat transfer
 - 3.6. Influence of heat on foodstuff
 - 3.7. Blanching
 - 3.8. Pasteurization
 - 3.9. Sterilization
 - 3.10. UHT
 - 3.11. Cooling
 - 3.12. Freezing
4. Processes based on heat and mass transfer
 - 4.1. Evaporation
 - 4.2. Drying
 - 4.3. Frying
 - 4.5. Baking

- 4.6. Extrusion
- 4.7. Agglomeration
- 5. Processes based on mechanical separation
 - 5.1. Centrifugation
 - 5.2. Filtration
 - 5.3. Membrane separation
- 6. Processes based on electromagnetic radiation
 - 6.1. Microwave and dielectric heating
 - 6.2. Infrared heating
 - 6.3. Irradiation
- 7. Food packaging
 - 7.1. Function of packaging: introduction
 - 7.2. Types of Packaging
 - 7.3. Packaging systems
 - 7.4. Modified atmosphere packaging
 - 7.5. Active and intelligent packaging
 - 7.6. Safety aspects of packaging migration

Initial competences

Basic knowledge in food chemistry.

Final competences

The student has acquired knowledge concerning the most important unit operations applied in food industry. He/She has gained insight in the impact of these unit operations on the quality of food products in a wide sense.

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

Guided self-study, group work, lecture, practicum, seminar: coached exercises

Learning materials and price

References

- HELDMAN D.R. & LUND D.B. (2007). Handbook of food engineering (second edition), Boca Raton, CRC Press, 1023p.
- PASSOS, M.L., RIBEIRO, C.P. (2010). Innovation in Food Engineering. New techniques and products. CRC Press, 721p. ISBN 978-1-4200-8606-5
- SINGH, R.P. & HELDMAN, D.R. (2001). Introduction to food engineering. San Diego, Academic Press Inc., 499 p. ISBN 0-12-646384-0
- VALENTAS, K.J., ROTSTEIN, E. & SINGH, R.P. (1997). Handbook of Food Engineering Practice. Boca Raton, CRC Press, 718 p. ISBN 0-8493-8694-2
- 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

Course content-related study coaching

Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination with open questions

Examination methods in case of periodic evaluation during the second examination period**Examination methods in case of permanent evaluation**

Participation, job performance assessment, report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Calculation of the examination mark

Written examination with open questions - 80%

Participation - 5%

Report - 10%

Performance assesment - 5%