International Summer University 2026
Module: Food Technologies
Level: Undergraduate/Graduate - Specialization

HOCHSCHULE OSNABRÜCK
UNIVERSITY OF APPLIED SCIENCES

Learning objectives (also considering students' soft skill competences):

The students are able to

- Evaluate different types of conventional food processing and new alternative technologies on the base of the latest findings
- Learn from valuable expert insights into latest developments in food engineering and food innovation
- Classify and describe food technologies of selected specialization areas
- Use the special terminology of the selected specialization areas
- Evaluate strategies/processes of product development
- Demonstrate capability of teamwork
- Show experience in procedures for professional problem solving in a research and industrial environment.
- Development of communication, self-management and group working skills
- Develop critical thinking skills and the ability to formulate critical ideas
- Develop the ability to understand academic literature.

Learning Contents

- focus on specific processing techniques in the areas
  -fruit and vegetable processing
  -dairy technology-meat technology
  -cereal processing
  -confectionary products
  Processing techniques and equipment will be selected according to the interest of the participants
- Practical course and group work on specific processing techniques
- Introduction to the European and German food market with an insight of the latest food developments
- Academic English and presentation skills

Skills enhanced include:

- Analytical thinking and problem-solving skills
- Reading and comprehension skills of academic literature
- Communication skills (e.g. class discussion, presentations, and course paper)
- Teamwork in international groups

Teaching methods
Learning outcomes will be achieved by lectures, group work and other appropriate methods. Besides classical lectures, the course will provide a practical session on pilot scale level. Students will be able to apply what they have learned and perform it in groups in practical trials, e.g. sensory tests, lab work and analytical methods. Apart from lectures students will have the chance to visit food processing companies and attend the cultural program that includes trips to Berlin, Amsterdam and Paris with guided city tours and visits to historic sights.

Requirements/prerequisites	This course is designed for second- or third-year Bachelor and Master students studying Food Production, Food Technology or Food Science. Students should have a study competence in English (B1-Level of the Common European Framework of References for Languages CEFR)
Examination	In-class presentation and oral examination (oral exam 50 % + presentation 50 %) a) 20-minute group presentation b) Final exam (oral)
Max. participants	20
Language of lecture	English
Promoter of the module	Prof. Dr. Stefan Töpfl Osnabrück University of Applied Sciences
Module instructor/ Home university	Prof. Dr. Stefan Töpfl Prof. Dr. Jacob Ewert Osnabrück University of Applied Sciences Dr. Eike Joeres DIL German Institute of Food Technology, Quakenbrück Guest Lecturers
Hours all in all a) Time spent in classroom b) Time spent outside classroom	Hours all in all: 150 hours a) 60 hours b) 90 hours: Time for preparation: 45 hours, Time for literature studies: 45 hours
ECTS-Credits	5
Literature recommendations	Appropriate literature will be handed out shortly before the course starts

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Literature recommendations

BARBOSA-CÁNOVAS, G. V., ZHANG, Q. H. (2019): Pulsed electric fields in food processing: fundamental aspects and applications. Boca Raton: CRC Press.

BERK, Y. (2013): Food Process Engineering and Technology. New York: Associated Press.

BHATTACHARYA, S. (2014): Conventional and advanced food processing technologies. Oxford: John Wiley & Sons.

CAUVAIN, S. (2015): Technology of Breadmaking. London: Springer.

FALGUERA, V, ALBERT I. (2014): Juice processing: quality, safety and value-added opportunities. Boca Raton: CRC Press.

FARKAS, D. F., DALLAS G. H. (2000): High pressure processing. Journal of Food Science 65, 47 – 64.

FEINER, G. (2006): Meat Products Handbook. Boca Raton: CRC Press.

FELLOWS, P. J. (2000): Food Processing Technology. Boca Raton: CRC Press.

FIGURA, L., TEIXEIRA, A. (2007): Food physics: physical properties-measurement and applications. Heidelberg: Springer Science & Business Media.

GOFF, H. D. (2013): Ice Cream. London: Springer.

HENDRICKX, M., KNORR, K. (2012): Ultra high-pressure treatment of foods. London: Springer Science & Business Media.

KESSLER, H. G. (2002): Food and Bio Process Engineering - Dairy Technology. Publishing house A. Kessler.

LAWRIE, R. A. (2006): Lawrie´s Meat Science. Boca Raton: CRC Press.

LELIEVELD, H. L. M., NOTERMANS, S., DE HAAN, S. W. H. (2007): Food preservation by pulsed electric fields: from research to application. Boca Rotan: CRC Press.

MEDENI, M., ALTAN, A. (2016): Advances in food extrusion technology. Boca Raton: CRC press.

MATZ, S. A. (2013): Snack Food Technology. Westport: Avi Publishing.

MCCLEMENTS, D. J. (2004): Food Emulsions: Principles, Practices and Techniques. Boca Raton: CRC Press.

SINGH, R. P. (2008): Introduction to Food Engineering. New York: Associated Press.

SMIT, G. (2003): Dairy Processing: Improving Quality. Boca Raton: CRC Press.

SUN, D. W. (2014): Emerging Technologies for Food Processing. Oxford: Elsevier.

TALBOT, G. (2009): Technology of Coated and Filled Chocolate, Confectionary and Bakery Products. Boca Raton: CRC Press.

TOEPFL, S., HEINZ, V., KNORR, D. (2006): Applications of pulsed electric fields technology for the food industry. Boston: Springer, 197 – 221.

TOLEDO, R. R. (2006): Fundamentals of Food Process Engineering. Boston: Springer.