

Technology of Vegetable Products (I001282)

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

Credits 5.0 **Study time** 135 h **Contact hrs** 60.0 h

Course offerings and teaching methods in academic year 2017-2018

A (semester 2)	practicum	10.0 h
	seminar: coached exercises	3.75 h
	self-reliant study activities	2.5 h
	lecture	27.5 h
	guided self-study	10.0 h
	demonstration	2.5 h
	excursion	3.75 h

Lecturers in academic year 2017-2018

Dewettinck, Koen	LA07	lecturer-in-charge
Van Bockstaele, Filip	LA15	co-lecturer

Offered in the following programmes in 2017-2018

	crdts	offering
Master of Science in Chemical Engineering	5	A
Master of Science in Chemical Engineering	5	A
Master of Science in Bioscience Engineering: Chemistry and Bioprocess Technology	5	A
Master of Science in Bioscience Engineering: Food Science and Nutrition	5	A
Exchange Programme in Bioscience Engineering: Chemistry and Bioprocess Technology (master's level)	5	A
Exchange Programme in Bioscience Engineering: Food Science and Nutrition (master's level)	5	A

Teaching languages

English

Keywords

Fats, oils, cereals, sugars, sweeteners, starch, vegetables, fruit, soy(bean), potato, composition, processing, preservation

Position of the course

This product focussed course deals with the technologies applied in the processing and preservation of vegetable products. Attention is paid to the study of the raw material, processing and preservation techniques, and quality aspects of the final product.

Contents

Theory

1. Fats and oils processing
2. Sweeteners
3. Fat and sugar replacements
4. Cereal processing
5. Starch processing and modification
6. Gums and hydrocolloids
7. Soybean processing
8. Coffee and tea processing

9. Fruit, vegetable and potato processing
10. Chocolate processing

Workshops

1. Workshop cocoa and chocolate processing
2. Workshop soybean processing
3. Workshop minimally processed vegetables
4. Workshop fat modification
5. Workshop bread making

Initial competences

Basic knowledge in biochemistry/biology

Final competences

- 1 Understand the processing of vegetal raw material into food products
- 2 Gain insight in the functionality of the vegetal raw material used for food products
- 3 Be aware of the impact of processing of vegetal raw material on the quality of food products in a wide sense
- 4 Perform calculations related to fat modification
- 5 Gain insight in microstructure of plant based products and their production processes
- 6 Write a scientific report related to a workshop
- 7 Integrate theoretical concepts in the practical sessions

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, demonstration, excursion, lecture, practicum, self-reliant study activities, seminar: coached exercises

Extra information on the teaching methods

The theory is given by means of lectures. A syllabus and slides are available as study material. During the exercises students have time to solve the problems individually or in group.

For the practical exercise the students will perform experiments and analyses in the lab.

Demonstration sessions are given.

A company visit is included to illustrate the theory.

Learning materials and price

There is an English syllabus available.

The course slides are available on Minerva.

References

BECKETT, S.T. (2009). Industrial chocolate manufacture and use. Wiley-Blackwell, West Sussex, UK, 720p.

BeMILLER, J. & WHISTLER, R. (2009) Starch: chemistry and technology. Academic Press, Burlington, USA, 879p.

BOCKISCH, M. (1998). Fats and oils handbook. AOCS press, Champaign, Illinois, USA, 838 p.

DAUTHY, M.E. (1995). Fruit and vegetable processing. FAO Agricultural service bulletins, 382p

DICKINSON, E (2005) Food colloids: interactions, microstructure and processing. The royal society of chemistry, Cambridge, 497p.

GARTI, N. & SATO, K. (2001). Crystallization processes in fats and lipid systems, Marcel Dekker, New York, 533p.

HAMM, W. AND HAMILTON, R.J. (eds.) (2000). Edible oil processing. Sheffield Academic Press, Sheffield, 281p.

KULP, K and Ponte, J.G. (2000). Handbook of cereal science and technology. Marcel Dekker Inc., NY, USA, 790p.

LIU, K. (1997). Soybeans. Chemistry, technology and utilization. Chapman Hall, Florence, USA, 532p

McClements, D.J (1999) Food emulsions: Principles, Practice and Techniques, CRC press LLC, 378 p.

McCLEMENTS, D.J (2007) Understanding and controlling the microstructure of complex foods. Woodhead Publishing, CRC press, Boca Raton, Florida, USA, 772p.

NABORS, L.O.'B. (2001). Alternative sweeteners. Third edition. Marcel Dekker Inc.,

New York, 553p

O'DONNELL, K. & KEARSLY, M. (2012). Sweeteners and Sugar Alternatives in Food Technology. Wiley-Blackwell, 484 p.

SJOBLOM, J. (2001) Encyclopedic handbook of emulsion technology, Marcel Dekker, New York, 736p.

ELIASSON, A.-C. (1996). Carbohydrates in Food. Marcel Dekker Inc., 561p.

Course content-related study coaching

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.

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

Written examination with open questions

Examination methods in case of permanent evaluation

Participation, assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Extra information on the examination methods

PE1 and PE 2: The exam is written. Open questions will be asked to assess insight in the study material.

NPE: the task is evaluated by the teaching assistants. Participation during exercises and practical sessions is evaluated by presence and commitment.

Calculation of the examination mark

Task and exercises: 10%, Written exam: 90%

Students who eschew period aligned and/or non-period aligned evaluations for this course unit may be failed by the examiner.