

Technology of Non-animal Products (O000146)

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

Credits	5.0	Study time	150 h	Contact hrs	60.0 h
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Course offerings and teaching methods in academic year 2019-2020

A (semester 2)	English	practicum	30.0 h
		lecture	30.0 h

Lecturers in academic year 2019-2020

Van Haute, Sam	KR01	lecturer-in-charge
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Offered in the following programmes in 2019-2020

Bachelor of Science in Food Technology	crdts	offering
	5	A

Teaching languages

English

Keywords

Fats, oils, cereals, sugars, sweeteners, starch, vegetables, fruit, fermentation, composition, processing, preservation, quality

Position of the course

This product focused course deals with the technologies applied in the processing and preservation of vegetable products. Knowledge of general food technology, food chemistry and food microbiology is applied on non-animal food products. Attention is paid to the study of the raw material, processing and preservation techniques, and quality aspects of the final product. Special attention is given on food fermentation.

Contents

1. Fats and oils
 - 1.1 Composition and physical characteristics
 - 1.2 Production
 - 1.3 Refining
 - 1.4 Modification processes
 - 1.5 Edible fat products
2. Wheat and wheat derived products
3. Sweeteners
 - 3.1 Sugar
 - 3.2 Alternative sweeteners
4. Starch
 - 4.1 Introduction
 - 4.2 Native starch
 - 4.3 Modified starches
5. Fruit and vegetable processing
 - 5.1 Composition and physical characteristics
 - 5.2 Processing techniques
6. Plant-based fermentations
 - 6.1. Introduction: important fermentation pathways
 - 6.1.1. Lactic acid fermentation
 - 6.1.2. Fermented vegetables
 - 6.1.3. Fermented cereals
 - 6.2. Alcoholic fermentations
 - 6.2.1. Beer
 - 6.2.2. Wine
 - 6.2.3. Sake
 - 6.3. Acetic acid fermentation
 - 6.4. Alkaline fermentation

- 6.5. High salt/savory sauce and paste fermentation
- 6.6. Fermentations producing textured vegetable protein meat substitutes
7. Soybean Processing
8. Chocolate production
9. Practical work on food fermentations

Initial competences

The student has basic knowledge of technology, microbiology, biochemistry, food chemistry

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 Gain insight in microstructure of plant based products and their production processes
- 4 Understands the principles of food fermentations and its applications
- 5 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

Demonstration, lecture, practicum

Extra information on the teaching methods

Workshops: pasta, bread, chocolate

Learning materials and price

Slides and practical notes will be available on the electronic platform.

References

- BOCKISH, M. (1998). Fats and Oils Handbook. AOCS Press, 1998, 838p
- KULP, K and Ponte, J.G. (2000). Handbook of cereal science and technology. Marcel Dekker Inc., NY, USA, 790p
- KENT, N.L. and Evers, A.D. (1994). Kent's technology of cereals. Fourth edition. An introduction for students of food science and agriculture. Elsevier Science, Ltd., Oxford, UK, 334p
- YAMAZAKI, W.T. and Greenwood, C.T. (1981). Soft wheat: production, breeding, milling and uses. American association of cereal chemists Inc., USA, 307p
- Mc DINNIS, R.A. (1982). Beet sugar development foundation, USA, 855p
- Meade, G.P. and Chen, J.C.P. (1977). Cane-sugar handbook. John Wiley & Sons, Inc. 947p
- MARIE, S. and Piggott, J.R. (1991). Handbook of sweeteners. Blackie and Son, Ltd, London, 302p
- NABORS, L.O.'B. (2001). Alternative sweeteners. Third edition. Marcel Dekker Inc., New York, 553p
- SCHENK, F.W. and Hebeda, P.E. (1992). Starch hydrolysis products. VCH Publishers, 650p
- VARNAM, A.H. and Sutherland, J.P. (1994). Beverages, Technology, chemistry and microbiology. Chapman and Hall, London, 464p
- ASHURST, P.R. (1998). The chemistry and technology of soft drinks and fruit juices. Sheffield academic press, England, 258p
- DAUTHY, M.E. (1995). Fruit and vegetable processing. FAO Agricultural service bulletins, 382p
- TALBURT, W.F. and Smith, O. (1967). Potato processing. The Avi Publishing Company, Inc., Westport, Connecticut, 588 p
- LIU, K. (1997). Soybeans. Chemistry, technology and utilization. Chapman Hall, Florence, USA, 532p
- Hutkins, R.W. 2006. Microbiology and technology of fermented foods. ISBN 978-0-8138-0018-9.
- Bamforth, C.W. 2005. Food, fermentation and micro-organisms. ISBN 978-0-632-05987-4.
- Hui, Y.H. 2006. Food biochemistry and food processing. ISBN 978-0-8138-0378-4.

Course content-related study coaching

Interactive counselling through minerva, electronic appointment booking, weekly office hours

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 multiple choice questions, assignment

Examination methods in case of permanent evaluation

Participation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Calculation of the examination mark

Theory: 75%

Practical work; 25%

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