UCLouvain

lbral2201

2026

Food technology

5.00 credits	52.5 h	Q2

Teacher(s)	Stenuit Benoît (coordinator) ;Van de Put Jean ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	The prerequisites for this course are the basic knowledge of chemistry, biochemistry and other natural sciences as gained during the different bachelors. **No other prerequisites are needed**. Courses which are giving more details on some of the discussed topics are: Génie des procédés : opérations unitaires [BIRC2109A] Biochimie brassicole [LBRAL2105] Chimie brassicole [BRAL2106] Chimie des denrées alimentaires [BRAL2103] Qualité organoleptique et microbiologique d'un aliment [BRAL2101]
Main themes	The goal of this course is to give the students the understanding of the technological value added during the food and beverage production process. The course shall lead the students to combine their basic knowledge of biochemistry, microbiology as well as energetic and environmental aspects with the technological possibilities to influence the creation of high quality food and beverages with respect to production costs, legislative restrictions as well as influences on the sustainability of the product. The course will therefore use the malting and brewing processes as model process to explicitly describe the different production steps from the raw material intake till the packaged products (unit operations for separation : sorting, filtration, decantation, centrifugation, distillation,' and conservation). In further lectures the gained knowledge will be applied to explain the analogies to other food processes and their specific differences (planned: meat, dairy, distilled products, fruits/vegetables). The students will further develop in their practical work process descriptions for these industries in a seminar style.
Learning outcomes	**At the end of this learning unit, the student is able to :** a. Contribution de l'activité au référentiel AA (AA du programme) 1.1, 1.2, 1.4, 1.5 2.1, 2.2, 2.4 4.1, 4.2, 4.6 7.3 b. Formulation spécifique pour cette activité des AA du programme In the end of this part of the course, the student, is able to: 1 - identify the conflicting priorities in food production and their impact on food products - analyze a process in the food industry holistically by considering all impacts on food quality, cost and the impact on the environment from raw materials till finished product - differentiate between different solutions for the same process step by evaluating their unique advantages and disadvantages with regards to the food production factors - develop own ideas for process improvements - transfer the learned principles to any other process in the food industry to understand and describe it - create a 'pilot process' in small scale out of the learned knowledge and understand its shortcomings compared to the industrial process
Evaluation methods	As part of this course, students are assessed in two ways: • continuous certification assessment including a mandatory seminar to be presented at the end of the semester (grade A: 30% of the final grade) • a written exam during the session (70% of the final mark). For this written exam, the part taught by B. Stenuit is worth 50% (grade B). The part taught by A. Kather is also worth 50% (grade C). The final grade is the weighted average of grades A (30/100), B (35/100) and C (35/100).

Teaching methods	The course is based on powerpoint presentations with multimedia content (embedded movies) and completed by the presentation (and distribution for the trials) of raw materials, process aids, process equipment, and example systems. Elearning is not explicitly included.
Content	1. Introduction (development what is Food Technology, how to work scientifically and interpret results) 2. Water technology a. Water and waste water treatment b. Water as raw material 3. Sterilization technology a. Basics of cooling and refrigeration b. Basics of pasteurization and sterilization processes c. High pressure treatment of food 4. Cereal technology a. The raw materials (mainly barley and wheat, but also corn, rice, sorghum, and others) b. Malting i. Cereal processing and Cereal storage ii. Steeping and Germination iii. Kilning and special malts with practical evaluation iv. Malting - practical malting trial** c. Baking and pasta production 5. Brewing technology a. Raw Material Intake and Milling b. Mashing c. Lautering / Mash filtration d. The raw material hop and hop products with practical hop evaluation e. Boiling and heat recovery (possibly with pratical brewing demonstration) f. Wort treatment (clarification, cooling, ...) g. Yeast and yeast treatment h. Fermentation and maturation (possibly with fermentation trial**) i. Stabilization and Filtration 6. Spirits technology a. Raw materials and distillation process b. Whisk(e)y with practical flavor evaluation 7. Dairy technology a. Milk production b. Butter production c. Cheese and fermented milk products (Yoghurt)* d. Practical butter and cheese production trial** 8. Meat technology a. Fresh meat production* b. Ham and sausages* 9. Technology for fruits and vegetables a. Production processes of canned fruits, frozen fruits, dried fruits, and potato chips* b. Vegetable oil production* 10. Other food production processes ' Practical work / presentations of students* 11. Packaging technology a. Packaging properties and needs b. Packaging machinery and packaging plants 12. Automation and IT in the food industry a. Basics of automation and communication with practical demonstration b. Production systems with practical demonstration *parts of these lectures can be done by the students practical work / presentations. ** practical trials by the students with presentation of the used methods
Inline resources	Moodle

Bibliography	Les PowerPoint du cours sont accessibles sur Moodle. Il est recommandé aux étudiants de les emporter avec eux lors des présentations orales Supports de cours facultatifs : - Briggs, E., et al.: Brewing: science and practice, 2004, Woodhead Publishing Limited, ISBN: 978-1855734906 - Kunze, W.: Technology brewing and malting, 4th updated English Edition, May 2010, ISBN: 978-3-921690-64-2, -Jeantet, R. et al.: Science des aliments ' 2. Technologie des produits alimentaires, Lavoisier, 2007, ISBN 978-2-7430-0888-8 -EUROPEAN COMMISSION: Reference Document on Best Available Techniques in the Food, Drink and Milk Industries, 2006, online available underhttp://eippcb.jrc.es/reference/BREF/fdm_bref_0806.pdf
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Chemistry and Bioindustries	BIRC2M	5		🔍
Master [120] in Agricultural Bioengineering	BIRA2M	5		🔍