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ASKFOOD – Alliance for Skills and Knowledge to Widen Food Sector-related Open Innovation, Optimization and Development

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Deliverable D3.3

Specifications of selected training activities

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Dissemination Level		
PU	Public	
PP	Restricted to other programme participants (including Commission services and projects reviewers)	
CO	Confidential, only for members of the consortium (including EACEA and Commission services and projects reviewers)	**X**

Summary:

This deliverable contains a list of training activities available as joint programmes at the partner institutions with description of target groups, learning outcomes, methods, where and how available.

This version is a draft version and will be finalised by M24.

Content

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1 Introduction

For the purpose of selecting innovative training activities (task 3.1) to be designed and developed (task 3.3), ASKFOOD partners were asked to provide a list of existing innovative courses and expertise available within their own organisations and on the basis of that suggest at least one training activity per partner to be designed and developed in task 3.3.

In a first step, partners were asked to fill in an excel file to provide a list of existing innovative courses and expertise available within the ASKFOOD Consortium. This list can be found in Annex 1.

Based on the list of existing innovative training activities available within the consortium, each partner was asked to suggest at least one training activity to be developed and implemented. At this point, M20, the list of training activities to be developed and implemented (task 3.3) is yet under discussion at a bilateral basis to match the requirements set out in the description of task 3.3. A complete list is expected to be finalised in the autumn 2019 so that the development and implementation can begin accordingly.

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2 List of selected innovative training activities

2.1 BOKU

Title of course	Meat, fish and delicatessen processing technology
Partner + Person responsible	DI Dr. Marija Zunabovic-Pichler
Description of content (short version)	2 ECTS. *General and technological significance of protein in food systems *Meat Technology *Technology of delicatessen products *Fish Technology
Target group	Students
Previous knowledge expected and workload for students	
Format	
Learning outcomes	After the lecture, students know the importance of different proteins in food systems in terms of their technological characteristics for processing of animal foods. They can give examples of indigenous and functional ingredients in foods and explain this using the example of meat, fish and delicatessen products. They can justify the use of common salt in food and explain the brine- and salting-out-effect. They know the importance of the isoelectric point (IEP). Students know about the chemical and physical changes of proteins and to know the effect of thermal energy on proteins. In addition, students are able to explain the structural subunits of lean meat and to sketch. Graduates of the course know the basic technological processes in the production of meat, fish and delicatessen products. They are capable to outline the process and equipment. They can recognize and explain the interactions of the different methods on food ingredients. Furthermore, students know the importance of the Codex Alimentarius and know where they can retrieve it. They are capable of assessing the food regulatory requirements for the different products. In addition, graduates have knowledge of trends in the processing and preservation of food and can estimated and explain consumer behavior of meat, fish and delicatessen products based on statistical data.
Teaching methods and tools	Blended learning, maybe flipped classroom
Teaching materials	
Assessment method	Written exam
Time frame	Running from March - June 2020 2h/week, 15 weeks
Language	
Qualification and skill requirements for teacher	

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Previous knowledge expected and workload for students	
Further information	
Link (if available)	

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2.2 Cassiopeia

Title of course	**Circular Economy and Food waste**
Partner + Person responsible	Dr. Germana Di Falco , PhD germana.difalco@gmail.com CASSIOPEIA
Description of content (short version)	The course will help participants in recognizing and using the new challenges related to circular economy in food and food related industries. In particular, food waste will be addressed so to stimulate an operational thinking about how to improve/renovate/create a proper business strategy that can combine the 8 TEMPESTS drivers related to this issue (circular ecomomy and food waste).
Target group	Food Startup entrepreneurs/food professionals
Previous knowledge expected and workload for students	Business Model Canvas; Innovation management models
Format	Game storming
Learning outcomes	Soft skills (e.g. communication, team work, problem-solving; responsiveness to the unexpected); transversal skills (e.g. interpersonal skills, project management skills; strategic and creative thinking); technical skills (e.g. circular economy; Food waste; Food security; Food Marketing; Food safety)
Teaching methods and tools	Serious Gaming (the 7Ps Framework; Affinity Map; Bodystorming; Empathy Map; The Anti-Problem; Context Map; OPERA method; Fishbowl; Spectrum mapping; The Five Whys)
Teaching materials	Detailed Guide + Workbook
Assessment method	Business Model Canvas Open Discussion and Peer Evaluation
Time frame	September- October 2019 5 Full Immersion Days
Language	Italian/English
Qualification and skill requirements for teacher	Basic Facilitation Techniques; Startup management; Circular Economy; Innovation Auditing
Previous knowledge expected and workload for students	Introductory pillars on Circular Economy Basic definitions and Food Waste Challenge Analysis Introductory pillars on Business Model Canvas and Foresight
Further information	The materials will be uploaded in a dedicated section of the ASKFOOD Website
Link (if available)	n.a.

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2.3 CUT

Title of course	**Introduction to vitrual reality tools in training and education**
Partner + Person responsible	Dimitris Tsaltas (dimitris.tsaltas@cut.ac.cy), Andri Ioannou (andri.ioannou@cut.ac.cy)
Description of content (short version)	The scope of this material is to present all current innovative technologies in to food science educators
Target group	Academic Staff
Previous knowledge expected and workload for students	
Format	Webinar
Learning outcomes	Technical Skills
Teaching methods and tools	Peer learning
Teaching materials	
Assessment method	
Time frame	October 2019
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	
Link (if available)	

Title of course	**Google Expedition Tool for VR training material**
Partner + Person responsible	Dimitris Tsaltas (dimitris.tsaltas@cut.ac.cy), Andri Ioannou (andri.ioannou@cut.ac.cy)
Description of content (short version)	The scope of this material is to familiarize the educator with the freely available tool of GOOGLE Expedition in order to create simple VR material for training purposes
Target group	Academic staff
Previous knowledge expected and workload for students	
Format	Webinar and ecourse
Learning outcomes	
Teaching methods and tools	Peer learning
Teaching materials	
Assessment method	

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Time frame	October 2019
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	
Link (if available)	

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2.4 LVA

Title of course	LVA inHouse trainings
Partner + Person responsible	Elvira.Bednar@lva.at julian.drausinger@lva.at LVA
Description of content (short version)	specific dedicated training for staff of companies on their site
Target group	graduates and workforce of the Austrian food industry
Previous knowledge expected and workload for students	Basic expertise in the fields of food law, quality management, food standards, hygiene and microbiology, sensory assessment, food contact materials
Format	Workshop
Learning outcomes	all aspects covering food law, quality management, audits and HACCP, food hygiene and microbiology, food contact materials and sensory evaluation
Teaching methods and tools	interactive training including case studies
Teaching materials	Digital presentations, printed course materials for the attendees
Assessment method	multiple choice test form
Time frame	1 day
Language	German
Qualification and skill requirements for teacher	Profound expert in his field, academic degree or graduate of technical school, rhetoric and paedagogic skills, knowledge in digital presentation tools
Previous knowledge expected and workload for students	See above
Further information	n/a
Link (if available)	www.lva.at/seminare/seminarprogramm.html

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2.5 UHOH

Title of course	**Mobile Teaching - Learning Locations**
Partner + Person responsible	Jeana Bechen University of Hohenheim
Description of content (short version)	The Hohenheim Learning Locations combine digital information like pictures, videos, tests, and comments with real places. The learning platform ILIAS and the Hohenheim App are the drivers of the learning locations
Target group	Students, General public
Previous knowledge expected and workload for students	
Format	Digital teaching material only available at a defined learning location
Learning outcomes	Depending on the Learning Location
Teaching methods and tools	Blended learning
Teaching materials	
Assessment method	
Time frame	
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	
Link (if available)	

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2.6 UNITE

Title of course	Research and Development for Food Innovation
Partner + Person responsible	Paola Pittia & Marco Faieta
Description of content (short version)	The course will drive Master students and professionals on the tools and strategies in the food sector to promote innovation. The role of innovation in the food sector will be discussed within seminars in presence of large and SMEs' R&D representatives
Target group	Master students in Food studies, professionals
Previous knowledge expected and workload for students	
Format	Course
Learning outcomes	Trainees will know the basic structure of R&D process to innovation; develop food product ideas and process innovation; develop indipendent thinking, problem solving and team working abilities
Teaching methods and tools	Blended, team project, ASKFOOD virtual tools, Reversed Incubator
Teaching materials	
Assessment method	project and pitch presentation
Time frame	March 2020 Intensive model - 1-2 full days/week up to 4 ECTS
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	
Link (if available)	

Title of course	Sustainable Entrepreneurship
Partner + Person responsible	Paola Pittia & Emilio Chiodo UNITE
Description of content (short version)	The intensive module is aimed to give the basic and applied knowledge and skills for implementing eco-innovation and sustainable entrepreneurial actions in food and food-related sectors. In the course by the use of innovative teaching tools and methods the key environmental and social elements for sustainable entrepreneurship will be delivered. In the module will be discussed the potentiality of social entrepreneurship (e.g., not-for-profit entrepreneurship), ecopreneurship (e.g., customer focused eco-products) or intrapreneurship (e.g., sustainable innovations).
Target group	Master students Food and non-food sector, professionals

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Previous knowledge expected and workload for students	
Format	Intensive course
Learning outcomes	The trainees will be able to implement entrepreneurial actions taking into account the social, environmental and ethical impact
Teaching methods and tools	Moocs, peer learning, team working
Teaching materials	
Assessment method	project and pitch presentation
Time frame	May 2020 Intensive course 2-3 days
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	
Link (if available)	

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2.7 UZAG

Title of course	**Course Chemistry and Technology of Meat and Fish**
Partner + Person responsible	Helga Medić hmedic@pbf.hr University of Zagreb
Description of content (short version)	The course focuses on primary processing of meat and meat categories. Post-mortem changes and meat composition in relation to meat quality. Technological quality of meat for processing: colour, pH value and water holding capacity. Preservation methods for meat products. Impact of preservation method on meat quality. The characteristics and production of different types of dry-cured meat products, canned meats and pate. Starter cultures in meat processing. Meat packaging. The spoilage of meat and meat products. Safety and quality of meat products. Functional meat products and application of novel technologies in meat industry. Course is also focused on influence of chemical composition on changes during processing and storage of fish. Changes during the post-mortem period and freezing of fish. Influence of internal and external parameters on the shelf life of the product. Methods to evaluate freshness of chilled and frozen fish. Changes in protein, fat and water content of fish during the production of fish products. Influence of antimicrobial factors on the safety, shelf life and product quality. Use of new procedures for prolonged shelf life and their impact on the quality of the products. Rapid methods in quality control.
Target group	Students
Previous knowledge expected and workload for students	
Format	Course
Learning outcomes	Soft skills (communication, team work); transversal skills (interpersonal skills, project management skills); technical skills (Food safety management, regulations, food hygiene)
Teaching methods and tools	Gamification; Peer learning;Blended learning
Teaching materials	
Assessment	Open question exam + Oral exam

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method	
Time frame	Running from October 2019 - January 2020
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	
Link (if available)	http://www.pbf.unizg.hr/en/departments/department_of_food_engineering/laboratory_for_meat_and_fish_technology/chemistry_and_technology_of_meat_and_fish

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2.8 WUR

Title of course	**Research Topics on Food and Society, a Beta-Gamma Approach**
Partner + Person responsible	Dr. Ruud Verkerk; ruud.verkerk@wur.nl Dr. Bea Steenbekkers; bea.steenbekkers@wur.nl University of Wageningen
Description of content (short version)	In this course students work in teams on a specific food innovation project commissioned by and in collaboration with a large food company. The course runs via three consecutive phases; 1. literature research; 2. qualitative consumer research (interviews); 3. quantitaive consumer research (questionnaires). Ultimately, the student teams deliver science-based innovative food product concept(s).
Target group	Students
Previous knowledge expected and workload for students	
Format	Course
Learning outcomes	e.g. Soft skills (e.g. communication, team work, problem-solving); transversal skills (e.g. interpersonal skills, project management skills); technical skills (formulate and design consumer-oriented food innovation)
Teaching methods and tools	lectures, tutorials, workshops, speed dates
Teaching materials	
Assessment method	Final report (Decision paper), delivered product innovation and individual reflection paper
Time frame	e.g. Running from May 2020 - July 2020 e.g. 8 weeks, intensive course
Language	
Qualification and skill requirements for teacher	
Previous knowledge expected and workload for students	
Further information	Materials can be available in a dedicated section of the ASKFOOD Website
Link (if available)	

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1 Annex 1 List of available innovative training activities within the Consortium

Title of course	Content	Organizer (name + email)	Teaching method(s)	Assessment method(s)	Duration	Target group	Brief description of the course
BOKU							
Validation of cleaning processes and hygienic design	hygienic design, cleaning and desinfection	Gerhard Schleining	blended learning, active learning	task assignments, written exam, presentation	1 Semster, 3 ECTS	students	This course gives an introduction to food safety and hazards by integration of the whole food supply chain, an overview of the relevant laws and guidelines, comprehensive information on hygienic design, zoning philosophy, cleaning and the cleaning validation concept. The course will be done as "blended learning", partially as e-learning (studying on-line materials, collaborative solving of tasks and case studies using a teamwork space, a forum and synchronous and asynchronous e-communication tools), and partially as face to face lectures. Case studies (theoretical and practical applications in the pilot plant) will be elaborated in team work. Students have to elaborate individual and group assignments like posting questions in forums, answering questions from the others, assess equipment from drawings, pictures and in a pilot plant, explaining risks and good solutions and making suggestions for improvement.
UHOH							
Start-Up Garage Hohenheim	Entrepreneurship skills	Leif Brändle	Case studies/ serious gaming	Pitch competition	up to 1 year	Students	innovative teaching format by the chair for entrepreneurship at the University of Hohenheim with the goal of making entrepreneurship accessible and usable for students. The methode is based on the Startup Garage of the Stanford Graduate School of Business and was carried out for the first time in the summer semester 2015. It then was the exercise course for the for lecture on Entrepreneurship but is now open to all students at the University of Hohenheim. The students are accompanied by the entire process from idea-forming to the first pitch.

Humboldt Reloaded	Other	Julia Gerstenberg	Other	Pitch competition	1 Semester	Students	The aim of the project Humboldt reloaded (HR) - "Humboldt reloaded - getting started in science" is to educate undergraduate students in, and get them enthusiastic about scientific research. Key is to introduce research-based projects for first and second year undergraduate students as part of their bachelor-program. It is the intention to bring together students in small groups to teach them about the scientific method. Already at an early phase and at the example of the most current issues in science, students can get acquainted with the research process.
Mobile Teaching - Learning Locations	Other		Blended learning	Other	undefined	Students	The Hohenheim Learning Locations combine digital information like pictures, videos, tests, and comments with real places. The learning platform ILIAS and the Hohenheim App are the drivers of the learning locations. With ILIAS, the teaching materials about the learning object are made available to Learning Locations (plug-in) and linked with the learning location using GPS coordinates. With a mobile end device like smartphones or tablets, the materials can be called up, added to, or commented on within a 150 radius of the real learning location.
HOMA! - Hohenheim macht!	Entrepreneurship skills	Arturo Morales, M.Sc.	Other	Pitch competition		Students	HOMA! works to strengthen entrepreneurial culture across all faculties at the University and to support research-oriented start-ups with an emphasis on bioeconomy. (The Hohenheim Start-Up Garage is a part of HOMA!)
UZAG							

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Chemistry and Technology of Meat and Fish	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Helga Medić	Blended learning	Open question exam	1 semester	Students	Primary processing of meat and meat categories. Post-mortem changes and meat composition in relation to meat quality. Technological quality of meat for processing. Preservation methods for meat and meat products.. Impact of preservation method on meat quality. Meat processing equipment. The characteristics and production of different types of sausages. Production of dry-cured hams, restructured whole-tissue meats, cooked meat products, comminuted meat products, cured meats and bacon. Canned meats and pate. Additives and spices. Starter cultures in meat processing. Meat packaging. The spoilage of meat and meat products. Safety and quality of meat products. Functional meat products and application of novel technologies in meat industry. By-products. Influence of chemical composition on changes during processing and storage of fish. Changes during the post-mortem period and freezing of fish. Influence of internal and external parameters on the shelf life of the product. Methods to evaluate freshness of chilled and frozen fish. Changes in protein, fat and water content of fish during the production of salted, smoked, marinated and canned products. Influence of antimicrobial factors on the safety, shelf life and product quality. Surimi. Production of fermented fish products, algae processing, functional products from aquatic organisms and by-products. Rapid methods in quality control.
Poultry and Eggs Science and Technology	Other	University of Zagreb, Faculty of Food Technology and Biotechnology Helga Medić	Blended learning	Written report	1 semester	Students	Importance of poultry farming. Types and breeds of poultry important for industrial production. Primary processing. Postmortem changes. Characteristics and quality of poultry meat. Processing of poultry meat. Chicken eggs and egg products. Poultry products safety and quality

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Raw materials for food industry	Other	University of Zagreb, Faculty of Food Technology and Biotechnology Helga Medić	Blended learning	Multiple choice exam	1 semester	Students	Fruits and vegetables: Production, botanical and technological classification. Botanical, physical and chemical criteria in quality assessment of fruits and vegetables (assessment methods, Croatian quality norms). Storage conditions. Chemical composition. Aspects of cultivation and structure of vines and grapes. Role of grapes in food industry. Grape variety. Grapes as raw material in production of wines. Origin, production and use of wheat, rye, oats, barley, rice, corn and pearl millet. Botanical, physical and chemical properties of cereals (laboratory methods, international standards, national quality standards). Storage of cereals. Equipment. Processing. Pests, Disinfection, desinsection, deratization. Food Quality a safety control. Botanical and others classifications of most important oil raw materials and their morphological structure. Basic chemical components (oil, proteins and cellulose), fatty acid share and oil properties. Differences between vegetable and animal raw materials. Biological and technological properties of sugar cane and beet, chemical composition, quality control, extracting, saturation and storage. Origin of cocoa tree, biological properties, chemical composition and sorts. Fermentation and quality. Storage and transportation. Milk-characteristics and composition (lipids, lactose, proteins, enzymes, minerals and vitamins). Breeding lines and anatomy of domestic animals. Classification and categorization of livestock and poultry. Chicken eggs – compositon and properties.Taxonomy of fish, shellfishes and molluscs.
Mineral, Spring and Table Water	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Josip Ćurko	Other	Written report	6 weeks	Students	LEARNING OUTCOMES Define and explain differences between natural mineral, spring, table and tap water based on EU legal regulations. Discuss about health and nutritive effects from consumption of mineral water Compare different packing materials used for bottling describe applicable technologies for natural water treatment Perform sanitation of water cooler

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Nutrition II	Other	University of Zagreb, Faculty of Food and Technology , Ivana Rumbak.	Blended learning	Open question exam	1 semester	Students	During lectures students will acquire basic knowledge about nutritional concerns and requirements that are specific to the different stages of the life cycle, during physical activity and for weight management. Students will gain knowledge about traditional diets, about world food supply and national food policy and guidelines. Diet and health relation will be discussed as well as new dietary trends and researches related to health.
Nutritional assessment	Other	University of Zagreb, Faculty of Food and Technology , Irena Colic	Blended learning	Open question exam	1 semester	Students	This module deals with the dietary assessment methods (dietetic, anthropometric, biochemical, clinical) and specific measurement aid tools that are used in this assessment process. Through lectures and exercises each of the dietary assessment methods is explained, as well as food standards and dietary guidelines, tables /database with the chemical composition of food, specific indices and methods "in vivo".
Chemistry and Technology of Milk and Milk Products	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Rajka Božanić	Blended learning	Open question exam	1 semester	Students	Composition, characteristics, nutritive value and differences of the main milk types. Methods and efficiency of mechanical, thermal and membrane processing of milk during production of pasteurised and sterile milk and milk powder. Milk fermentation by mesophilic, thermophilic, therapeutic and combined cultures of bacteria, and by yeasts as moulds as well. Impact of technological processes on characteristics of fermented milks. The role of probiotics and prebiotics. Nutritive value and therapeutic effects of fermented milks. Cheese classification. Methods of milk coagulation. The role of dairy cultures and other additives into cheese milk. Technological processes in production of different cheese types. Conditions and nurturing of cheese during ripening. Biochemical processes involved in primary and secondary stages of ripening, the ways of protecting cheese and possible defects. Composition and nutritive value of cheese and whey, possibilities of whey processing. Production of butter and ice cream.

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Sensory and Chemometric Evaluation of Wine	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Karin Kovačević Ganić		Multiple choice exam	1 semester	Students	The course objective is introducing the students with adequate presentation, description and eating of wines. Within the course, students will learn about the physiology of olfaction (smell), taste, sight and hearing, as well as about the basic description of wine: flavour, taste and colour. Furthermore, students will also learn about the most common wine deficiencies, faults and diseases. In addition, they will learn about the most frequently used tests for sensory evaluation as well as most common physicochemical, spectrophotometric and instrumental analyses of musts and wines.
Applied Instrumental Analysis	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Karin Kovačević Ganić	Case studies/ serious gaming	Written report	1 semester	Students	The course objective is the application of the gained knowledge and development of practical skills required to independently perform the analysis using a sophisticated instrumental analytical technique.
Production of Predicate and Sparkling Wines	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Natka Ćurko	Blended learning	Open question exam	1 semester	Students	Production of "special wines" in world production takes a significant place. These wines are technologically more demanding to produce because they seek knowledge that is applied in the usual production processes, as well as the specificity depending on the type of wine. In this segment, it is particularly important to define wine by the regional rules. Students will learn to recognize the differences in production technology and the organoleptic specificities of different wines, and also will be closer to the "production philosophy" with special emphasis on the critical points of the production. After completing the course, students will be able to upgrade their knowledge from other basic wine-making courses, and will be prepared to overcome the technological problems in such production.

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Chemistry and technology of carbohydrates and confectionery products	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Drazenka Komes	Blended learning	Open question exam	1 semester	Students	1. Raw materials for the production of sugar 2. Extraction of sugar from sugar beet, purification and evaporation of the extraction juice, sugar crystallization 3. Storage and secondary products in production, oligosaccharides and polysaccharides in the food industry, starch 4. Cultivation and processing of cocoa beans 5. Production of cocoa liquor, cocoa powder and cocoa butter 6. Production of chocolat, chocolate-like and cream products 7. Candy and related products- types and raw materials for their production, production of different types of candy products and confectionery masses
Chemistry and technology of stimulant food	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Drazenka Komes	Blended learning	Open question exam	6 weeks	Students	1. The history, botanical classification and cultivation of tea 2. Tea blends. The production of instant tea. Herbal infusions. 3. GABA teas, Maté tea (Ilex paraguariensis), Rooibos (Aspalathus linearis) tea – botanical classification, cultivation and processing. 4. The chemical composition of tea and its physiological effect on the human organism. 5. The history of coffee. The botanical classification, cultivation and processing of coffee. 6. The production of instant coffee. The decaffeination procedures. 7. The chemical composition of coffee, the physiological effect of coffee on the human organism. Coffee substitutes. 8. Cocoa– botanical classification, cultivation and processing. 9. The production of cocoa powder. Instant cocoa drinks. 12. Cupuaçu (*Theobroma grandiflorum*) and guarana (*Paullinia cupana*) – botanical classification, cultivation and processing.

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Sweeteners	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Drazenka Komes	Blended learning	Open question exam	6 weeks	Students	1. The classification of sweeteners, the relative sweetness 2. Monosaccharide, disaccharide and oligosaccharide sweeteners- properties and use 3. Sweeteners based on starch (physico-chemical properties, production) 4. Sugar alcohols - production, physico-chemical properties and use. 5. Non-saccharide carbohydrates (honey)- chemical composition, physical properties 6. Non-carbohydrate sweeteners (sintetic, intensive, non-nutritive) 7. Natural sweeteners- sources, production and use
Oil and Fat Chemistry and Technology	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Dubravka Škevin	Interdisciplinarity	Oral exam	1 semester	Students	Raw material evaluation criteria for edible oil processing and production of protein rich food. Expanding the raw material base. Technical-technological characteristics and microstructure of oil raw material and connection with individual production phases. Comparison and choice of technological procedures for crude oils and fats production. Cold pressed oils. Non-refined oils with accent to olive and pumpkin seed oil. Specifics of animal fats and see mammals and fish fats production. Factors determining the quality and oil cake and meal usage. Pre-refining of crude oil – conditions and dilemma. Comparison of refining processes and facilities. By-products. The influence of technological processes on oil quality and stability. Introduction to oil modification processes. Comparison of solid and plastic fats and emulsions production procedures (margarine, mayonnaise). Legislation, quality and authenticity control methods. Chemistry and technology of food deep frying and evaluation of oil and final product quality. New direction in research of lipids, oils and fats in food and diet. Modern approach to oils and fats composition and consumption. Technological projects of plant for non-refined and refined oil production.

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Modified Fats and Oils	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Dubravka Škevin	Peer learning	Written report	6 weeks	Students	Comparison of technological procedures for fat modification: fractionation, directed and random interesterification, hydrogenation, combination of procedures. Fat crystalization and the importance of polymorphism and triglyceride composition. Consistency. Shortenings: definition, principles of classification; oil blends – plastic, fluid and powdered shortenings. Bakery shortenings. Frying shortenings. Cocoa butter substitutes and equivalents. Margarine and related products: historical and recent trends. Legislation. MCT- oils, olestra, multifunctional oils. Role of these fats in nutrition.
Food Additives	Other	University of Zagreb, Faculty of Food Technology and Biotechnology,Dubravka Škevin	Other	Open question exam	1 semester	Students	1. What are food additives, and their classification according to properties and origin. 2. The safety evaluation of food additives. 3. The effect of chemical and physical factors on functionality and stability of food additives. 4. Benefits and risk of additives. 5. Legislation on additives. 6. Specific additives for particular food products and their function
Processing of Olives and Quality Control of Products	Other	University of Zagreb, Faculty of Food Technology and Biotechnology, Dubravka Škevin	Blended learning	Open question exam	6 weeks	Students	History and characteristics of the olive oil tree. Olive fruit structure. The importance of optimal harvesting and storage of olive fruits prior to processing. Procedures for olive fruit preservation (traditional and modern) and quality evaluation of the products. Comparations of processes of olive oil manufacture (pressing, centrifugal extraction, percolation). Solvent extraction and olive pomace oil. By-products utilization. Olive oil composition and properties. Factors affecting olive oil quality. Gourmet oils and other products. Requirements on olive oil storage and packaging. Specifics of deterioration of olive oil. International Olive Oil Council (IOOC) – trading specifications and standards for olive oil quality and authenticity and national legislation. Mediterranean diet, olive oil and human health.
WUR							

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Food quality management (FQD20306)	Food quality management / Techno-managerial approach	Dr. ir. Elsbeth Spelt, Wageningen University and Research	Lectures, tutorials, and case assignments	Multiple choice questions (20) and one case	8 weeks (6 ECTS)	Master students in Food and Management (first year)	Management of food quality in the agri-food chain is rather challenging, because it deals with as well complex food production systems as dynamic food organizations operating in a vigorous environment. Integration of knowledge from natural and social sciences is therefore crucial in this area. The course is an introduction into the technological and managerial principles and practices in food quality management.
Food quality analysis and judgement (FQD-22306)	The measurement of food quality attributes in relation to the control decisions in factories	Dr. ir. Femke Brouwer, Wageningen University and Research	Lecturers, tutorials, groupwork, case assignments and practicals	Written exam, final group reports and presentations	8 weeks (6 ECTS)	Master students in Food quality management (first year)	Food Quality Analysis and Judgement is a course which focuses on measuring and evaluating food quality through finding relevant measurable food properties that are indicators for food quality aspects. Theoretical topics (lectures) include chemical, physical, and sensorial indicators for food quality plus lectures on judgement in decision making processes. The extensive practical deals with translating the concept of food quality of real products into measurable food properties, to measure these, to judge the outcomes and to translate these back to food quality. In the last phase of each practical the students draw conclusions based on experimental data and report their findings. In the case assignment the students need to relate the conclusions from the practical to management decisions in a real company situation.

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Food quality management research principle I (FQD-64306)	Research principles in the field of food quality management	Dr. ir. Pieternel Luning, Wageningen University and Research	Lectures, tutorials, and case/research assignment, group work	Research report, individual assessment and critical reflection	4 weeks (6 ECTS)	Master students in Food quality management, Food safety management and Food technology (first year)	Food Quality Management (FQM) research encompasses the field of analysing and mitigating (solving) complex food quality management issues. It embodies understanding of technological aspects of agri-materials, ingredients and final foods and their food production systems (from stable to table), and how these affect product quality and safety. Moreover, it involves understanding of aspects related to people behaviour, quality management processes, organisational structures, supply chain management, governance (etc.), and how these affect the performance of the FQM functions (design, control etc.) aimed at realising and ensuring food quality.
Food quality management research principle II (FQD-64806)	Research principles in the field of food quality management	Dr. ir. Pieternel Luning, Wageningen University and Research	Lectures, tutorials, and case/research assignment, group work	Research report, individual assessment and critical reflection	8 weeks (6 ECTS)	Master students in Food quality management (first year)	The research principles course II (FQD 35906) builds further on the previous course FQD-35806; the combined courses are the academic master course for MSc students in Food Quality Management. The course aims at learning how to apply the techno-managerial approach in collecting and analysing data/information on possible technological and managerial causal factors and develop possible interventions and recommendations to mitigate the FQM issue (research skills). The course will also broaden knowledge in the domain of food quality management by a group assignment on an actual topic about FQM in the food industry such as food safety culture, lean manufacturing, food waste reduction, risk-based supplier control, risk-based auditing, etc. (knowledge gaining). Furthermore, students will train their scientific reporting skills (writing skills).
Food logistics management (ORL-31806)	Integration of food quality and food logistics	Dr. Behzad Behdani, Wageningen University and Research	Lecturers, tutorials, groupwork, game coupled with case	Written exam with open questions and the assignments done throughout the course	8 weeks (6 ECTS)	Master students in Food technology, Food quality management (first year)	Food Logistics Management (FLM) is about how organisations fulfil market demand by getting the right food product, in the right quantity and quality, at the right time and place, as efficient and sustainable as possible. It discusses issues and developments in logistics theory (such as buffering, inventory management, risk pooling) and combines it with developments in food quality management (such as quality monitoring and control, product quality prediction models) and information technology. Together it provides a firm basis for research on Quality Controlled Logistics (QCL), i.e. using information on the dynamic product quality behaviour to control goods

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			assignments				flows in the supply chain in order to optimize product availability at retail outlets in an efficient and sustainable way.
Introduction to management and life sciences (YSS-22306)	Interdisciplinarity, Bèta-Gamma disciplines, innovative products and processes	Dr. Edurne Inigo, Wageningen University and Research	Lectures, tutorials, and case/research assignment, group work	Final group report, presentation and defence, written exam	8 weeks (6 ECTS)	Master students in all kinds of programs (first year)	Management Sciences provide the instruments that enable the design, implementation, and support of innovative organizational and business processes, which are required to successfully diffuse innovative products and processes into society. Béta-engineers may adopt a management role in academic environments, in production facilities or in supply chains. From this professional perspective, Bèta-engineers apply their knowledge within settings that include people with different backgrounds, different interests, and from different positions in the chain or from different knowledge institutions. It is the integration and effective use of these varying positions and perspectives that ensures the successful completion of complex processes, such as product innovation or management of a supply chain.
Msc thesis Food quality and Design (FQD-80436)	Research in e.g. Food quality management	Dr. ir. Elsbeth Spelt, Wageningen University and Research	Lectures, individual research work and MFQ colloquia, supervision meetings	Final research report, research competence, research presentation and defence of the research	6 months (36 ECTS)	Master students in Food quality management (second year)	In line with the Food quality management research principles courses which are being taught to the students in the two above mentioned courses, the master students in Food quality management has to conduct an interdisciplinary research on their own under supervision of two supervisors to demonstrate their research competencies in the field of Food quality management.

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MSc internship Food quality and Design (FQD-70436)	Internship in e.g. Food quality management	Dr. ir. Jozef Linssen, Wageningen University and Research	Supervision meetings, workplace meetings	Final report, professional skills, report internship, self-reflection, presentation, and defence	6 months (36 ECTS)	Master students in Food quality management (second year)	The aim of the academic internship is that students gain experiences in an academic working environment. The internship provides the student the opportunity to work outside Wageningen University at a host organisation, e.g. a company, public institution, consultancy firm, research organisation, another university or non-governmental organisation, thereby broadening the academic horizon. The host organisation/work should be of sufficiently high academic standard to reflect the desired level of Wageningen graduates. For example students make a policy document, communication plan, evaluation report, landscape design, education or communication material or perform a research project.

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