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Please note that only the German version of the modules is official and legally binding. The English version is for informative purposes only.

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MLC-01	Chemistry and Analysis of Water	1st sem.	9 CP	
Module description	Chemistry and Analysis of Water			
Module code	MLC-01			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/ Semester taken	M.Sc. Food Chemistry/1 st semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know the chemical and physical parameters of drinking water, mineral water, table water and medicinal water become familiar with instrument-based analytical techniques and procedures to investigate basic parameters and contaminants be able to prepare an analysis plan to investigate drinking water, mineral water, table water and medicinal water assess drinking water, mineral water, table water and medicinal water using the analytical data obtained 			
Module content	<ul style="list-style-type: none"> Chemical and physical parameters of drinking water, mineral water, table water and medicinal water Theoretical basis of analytical techniques and procedures Legal requirements Quantitative determination of basic parameters (pH, hardness, aggressivity and mineral content) and of potential contaminants (e.g. cyanide, pesticides, etc.) in the laboratory 			
Form(s) of instruction	Lecture/seminar/laboratory			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		9 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Chemistry and Analysis of Water	15	15	25 20 75
	S Seminar	15	30	45
	P Laboratory	75	75	150
	Total	105	120	25 20 270
Module examination	Examination requirements	Regular attendance at laboratory/successful solution of lab assignments/laboratory reports		
	Method(s) of assessment (duration)	Final examination (oral)		
	Contribution to the final mark	Final examination based on the lectures and the laboratory (100%)		
	Module retake examination	Final examination (oral)		
Frequency	Winter semester Duration: 1 semester			
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

MLC-02	Special Biochemistry of Nutrition	1st sem.	3 CP
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Module description		Special Biochemistry of Nutrition				
Module code		MLC-02				
Faculty/Subject/Department		09/Agricultural Sciences, Ecotrophology and Environmental Management/ Nutritional Science				
Associated degree course/Semester taken		M.Sc. Food Chemistry/1 st semester				
Module coordinator		Cf. German version				
Prerequisites						
Learning outcomes	The students will					
	<ul style="list-style-type: none"> • have knowledge of the principles of metabolic regulation at molecular and cellular level • be able to discuss how the metabolism of nutrients is regulated at organ level • know the molecular mechanisms of receptors and signal transduction • know the interrelationship between structure and function of enzymes/proteins • understand immunological processes and their interaction with the environment and nutrition • know the significance of proteome and transcription analyses in biochemistry or nutritional science 					
Module content	<ul style="list-style-type: none"> • Receptors and signal transduction of eukaryotic cells • Compartmentalisation of the metabolism with regard to the special functions of the organelles • Enzymes (structure, catalysis mechanisms, inhibition, regulation, linear and non-linear regression, enzyme diagnostics, coenzymes) • Chaperone, post-translational modifications, control of objectives of proteins, protein reduction • Differential genome and proteome analyses and their evaluation • Nucleotide metabolism and its dysfunctions • Immunology (complement system, allergies and their prevention/treatment, and immunological tests) • Interactions between nutritional content and genes (e.g. in cancer) • Nutrition and infection (mycotic, bacterial, viral and parasitic) • Apoptosis (cascades, regulation and markers) 					
Form(s) of instruction		Lecture				
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit			3 CP	
	Course type and title		A Formal instruction	B Auto-nomous work	C Final examination	
			a Contact hours	b Pre-paration / revision	incl. pre-paration	Total
	L Lecture		30	30	30	90
		Total	30	30	30	90
Module examination	Examination requirements					
	Method(s) of assessment (duration)	Written examination (90 min.)				
	Contribution to the final mark	Written examination (100%)				
	Module retake examination	Written examination (90 min.)				
Frequency		Winter semester		Duration: 1 semester		
Intake capacity		Unlimited				
Language of instruction		German				
Additional information		Module guidance and literature: see notice board/Dates: see course catalogue				

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MLC-03	Chemistry and Analysis of Animal Feed	1st sem.	8 CP		
Module description	Chemistry and Analysis of Animal Feed				
Module code	MLC-03				
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology				
Associated degree course/Semester taken	M.Sc. Food Chemistry/1 st semester				
Module coordinator	Cf. German version				
Prerequisites					
Learning	<p>The students will</p> <ul style="list-style-type: none"> • know the essential ingredients of animal feeds for different types of livestock • be familiar with the analysis of animal feeds • be familiar with anti-nutritional factors and potential contaminants • know the relevant legislation in this regard 				
Module content	<ul style="list-style-type: none"> • Product overview of animal feed • Analytical techniques and procedures • Manufacturing processes • Contaminants (PCBs, PAHs, pesticides, dioxins, heavy metals and mycotoxins) • German and European Animal Feed Regulations 				
Form(s) of instruction	Lecture/seminar/laboratory				
Total workload in hours	30 hours = 1 ECTS credit		8 CP		
Workload in hours	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration	Total
	L Lecture – Chemistry and Analysis of Animal Feed	15	30	30	75
	S Seminar	15	30		45
	P Laboratory	60	60		120
	Total	90	120	30	240
Module examination	Examination requirements	Regular attendance at seminars and laboratory/successful solution of lab assignments/laboratory reports			
	Method(s) of assessment (duration)	Final examination (oral)			
	Contribution to the final mark	Final examination based on the lectures and the laboratory (100%)			
	Module retake examination	Final examination (oral)			
Frequency	Winter semester		Duration: 1 semester		
Intake capacity	20				
Language of instruction	German				
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue				

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MLC-04	Food Technology 1	1st sem.	3 CP	
Module description	Food Technology 1			
Module code	MLC-04			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/1 st semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> • be familiar with the basic principles of the industrial production of wine and fruit juices • know the plant and equipment used in the fruit and vegetable processing industry • be able to assess material changes brought about by basic process operations • be able to assess production processes in terms of critical control points (HACCP) 			
Module content	<ul style="list-style-type: none"> • Basic mechanical operations (cleaning, sorting, chopping, etc.) • Basic thermal operations (heating, cooling and freezing, concentrating, drying and distilling) • Biotechnological processes (fermentation, acidification, etc.) • Plants and processes 			
Form(s) of instruction	Lecture			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		3 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Food Technology 1	30	30	30 90
	Total	30	30	30 90
Module examination	Examination requirements			
	Method(s) of assessment (duration)	Written examination (90 min.)		
	Contribution to the final mark	Written examination (100%)		
	Module retake examination	Written examination (90 min.)		
Frequency	Winter semester Duration: 1 semester			
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-05	Basics of National Food Law & Company Visits 1		1st sem.	4 CP
Module description	Basics of National Food Law & Company Visits 1			
Module code	MLC-05			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/1 st semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know the basics and structures of international, European and German food, animal feed, commodity and cosmetic law (food law) be familiar with its application in the food industry and in official controls of foodstuffs have an overview of the organisation and functionality of the official controls of food, animal feed, commodities and cosmetics within the European Union and the Federal Republic of Germany 			
Module content	<ul style="list-style-type: none"> Commodity regulations Cosmetic regulations General administrative regulation on principles for official verification of compliance with food law, wine and tobacco legislation (AVV – RÜb) 			
Form(s) of instruction	Lecture/excursion			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		4 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Food Technology 1	30	30	30 90
	E Excursion (company visit)	10	20	30
	Total	40	50	30 120
Module examination	Examination requirements	Participation in excursion		
	Method(s) of assessment (duration)	Short lecture		
	Contribution to the final mark	Final examination based on the lectures (100%)		
	Module retake examination	Short lecture		
Frequency	Winter semester		Duration: 1 semester	
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-06	Microbial Diagnostics	1st sem.	3 CP	
Module description	Microbial Diagnostics			
Module code	MLC-06			
Faculty/Subject/Department	09/Microbiology/Department for Applied Microbiology			
Associated degree course/Semester taken	Master's degree courses Nutritional Sciences/Environmental and Resource Management/Agrobiotechnology/Food Chemistry/1 st semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> • have knowledge of the fundamentals of microbial diagnostics and • know quality standards and inspection measures in the fields of environmental technologies and food microbiology • learn methods of quantification and qualification of bacteria with cultivation-dependent and cultivation-independent methods 			
Module content	<ul style="list-style-type: none"> • Hygiene, control of transmissible diseases, disinfection, sterilisation, bacteriological quality control of food, drinking water • Microbiological diagnostics (conventional and molecular biological methods in the context of quality assurance measures), microbial contamination of food and the environment in everyday life and in the working environment (legal bases and standards) • Quantification and qualification of biotechnologically important microorganisms; accumulation of physiological specialised microorganisms; identification of bacteria with conventional and molecular biological methods; enzyme detection, bacteriological analyses in the context of microbiological quality control 			
Form(s) of instruction	Lecture			
Total workload in hours	30 hours = 1 ECTS credit		3 CP	
Workload in hours	Course type and title	<p>A Formal instruction</p> <p>a Contact hours</p> <p>b Pre-paration / revision</p>	<p>B Auto-nomou s work</p> <p>C Final examinati on incl. pre-paration</p>	Total
	L Lecture – Microbial Diagnostics	30	30	30
	Total	30	30	30
Module examination	Examination requirements			
	Method(s) of assessment (duration)	Written examination (45 min.)		
	Contribution to the final mark	Written examination (100%)		
	Module retake examination	Written examination		
Frequency	Winter semester	Duration: 1 semester		
Intake capacity	40			
Language of instruction	English			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-07	Quality Management, Food Safety and Novel Food	2nd sem.	6 CP	
Module description	Quality Management, Food Safety and Novel Food			
Module code	MLC-07			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/2 nd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> develop an understanding for the significance of quality management systems for the food industry (main focus – areas of production) and analytical laboratories know the underlying standards be able to identify parameters/sources of error know tools and principles which help avoid or reduce error or assure quality have an overview of the field of novel foods 			
Module content	<ul style="list-style-type: none"> Standard series EN ISO 9000 et seq. Definition of the concept of quality/certifications/difference between critical to business/critical to quality Voice of the customer Tools for quality management systems (quality manual, specifications, written operating instructions [test provisions, standard operating procedures, standard operating instructions], maintenance, calibration, qualification, validation, change control, monitoring, CAPA/impact assessment, root cause analysis, complaint system, traceability, document review, archiving, periodic review, audits, continuous improvement) Risk management: Potential and frequent sources of error; significance of risk management/tools for risk management (FMEA etc.) Actions to avoid and identify error: definition of roles & responsibilities/organisational structure/delegation (RACI matrix, organigrammes, etc.), check lists, independent testing Process improvement tools Novel food (product overview, legal provisions) 			
Form(s) of instruction	Lecture/seminar/tutorial			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		6 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration/ revision	C Final examination incl. pre-paration Total
	L Lecture – Quality Management, Food Safety and Novel Food	30	30	30 90
	S Seminar – Quality Management & Food Safety	15	30	45
	T Tutorial – Quality Management & Food Safety	15	30	45
	Total	60	90	30 180
Module examination	Examination requirements	Regular attendance at seminars and tutorials/solution of tutorial assignments		
	Method(s) of assessment (duration)	Written examination (60 min.)		
	Contribution to the final mark	Written examination (100%)		
	Module retake examination	Written examination		
Frequency	Summer semester	Duration: 1 semester		
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-08	Basics of European Food Law & Company Visits 2	2nd sem.	4 CP	
Module description	Basics of European Food Law & Company Visits 2			
Module code	MLC-08			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/2 nd semester			
Module coordinator	Cf. German version			
Prerequisites	MLC-05			
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know the basics and structures of international, European and German food, animal feed, commodity and cosmetic law (food law) be familiar with its application in the food industry and in official controls of foodstuffs have an overview of the organisation and functionality of the official controls of food, animal feed, commodities and cosmetics within the European Union and the Federal Republic of Germany 			
Module content	<ul style="list-style-type: none"> International food trade under the umbrella of the World Trade Organisation (WTO) based on the standards of the Codex Alimentarius Regulations and directives of the European Union in respect of food law: incl. Regulation (EC) No. 178/2002; Regulation (EC) No. 882/2004; Regulation (EC) No. 852/2004; Regulation (EC) No. 1935/2004; and Directive 76/768/ECC German Food and Feed Code (LFGB) 			
Form(s) of instruction	Lecture/excursion			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		4 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Food Law 2	30	30	30 90
	E Excursion (company visit)	10	20	30
	Total	40	50	30 120
Module examination	Examination requirements	Participation in excursion		
	Method(s) of assessment (duration)	Short lectures		
	Contribution to the final mark	Final examination based on the lectures (100%)		
	Module retake examination	Short lectures		
Frequency	Summer semester	Duration: 1 semester		
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-09	Chemistry of Commodities and Cosmetics	2nd sem.	9 CP	
Module description	Chemistry of Commodities and Cosmetics			
Module code	MLC-09			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/2 nd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> • have knowledge of the composition and analysis of commodities (incl. synthetic materials, packaging materials and cleaning agents) and cosmetic products (incl. sunscreen, hair-care and skincare products) • know the mode of action of relevant ingredients • be able to analyse the relevant ingredients and assess the products 			
Module content	<ul style="list-style-type: none"> • Ingredients of cosmetic products (active substances, preservatives, etc.) • Materials and articles in contact with food (packaging, cutlery, dishes, etc.) • Chemical migration from packaging to food • Special analysis techniques and procedures 			
Form(s) of instruction	Lecture/seminar/laboratory			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		9 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration/ revision	C Final examination incl. pre-paration Total
	L Lecture – Chemistry of Commodities & Cosmetics	30	30	15 30 105
	S Seminar	15	30	45
	P Laboratory	60	60	120
	Total	105	120	15 30 270
Module examination	Examination requirements	Regular attendance at seminars and laboratory/successful solution of lab assignments/laboratory reports		
	Method(s) of assessment (duration)	Final examination (oral)		
	Contribution to the final mark	Final examination based on the lectures and the laboratory (100%)		
	Module retake examination	Final examination (oral)		
Frequency	Summer semester	Duration: 1 semester		
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-10	Environmental Analysis and Ecotoxicology			2nd sem.	8 CP	
Module description	Environmental Analysis and Ecotoxicology					
Module code	MLC-10					
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology					
Associated degree course/Semester	M.Sc. Food Chemistry/2 nd semester					
Module coordinator	Cf. German version					
Prerequisites						
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know substances harmful to the environment (incl. PAHs, dioxins, PFTs, pesticides and pharmaceuticals) and their persistence know biotic and abiotic degradation pathways of xenobiotics and their metabolites master methods of environmental analysis understand the toxic effects of different xenobiotics on the ecosystem be able to assess contamination of soils, water and air 					
Module content	<ul style="list-style-type: none"> Pesticides (insecticides, fungicides, herbicides, molluscicides and rodenticides) Pharmaceutical residues Behaviour of chemicals in the environment (persistence, biotic and abiotic degradability and bonded residues) Assessment of chemicals in terms of their potential risk to the environment Special analysis techniques and procedures 					
Form(s) of instruction	Lecture/seminar/tutorial/laboratory					
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit			8 CP	
	Course type and title	A Formal instruction a Contact hours	b Pre- paration/ revision	B Auto- nomous work	C Final examination incl. pre- paration	Total
	L Lecture – Environmental Analysis and Ecotoxicology	15	15		30	60
	S Seminar	15	15			30
	T Tutorial	15	15			30
	P Laboratory	60	60			120
	Total	105	105		30	240
Module examination	Examination requirements	Regular attendance at seminars, tutorials and laboratory/successful solution of lab and tutorial assignments/laboratory reports				
	Method(s) of assessment (duration)	Final examination (oral)				
	Contribution to the final mark	Final examination based on the lectures, laboratory and tutorials (100%)				
	Module retake examination	Final examination (oral)				
Frequency	Summer semester	Duration: 1 semester				
Intake capacity	20					
Language of instruction	German					
Additional informationh	Module guidance and literature: see notice board/Dates: see course catalogue					

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MLC-11	Food Technology 2	2nd sem.	3 CP	
Module description	Food Technology 2			
Module code	MLC-11			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/2 nd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> • master the basic technical and biotechnical procedures relevant to the food industry • be familiar with special separation techniques • understand the basic principles of the processing of food of animal and plant origin 			
Module content	<ul style="list-style-type: none"> • Grain technology • Production of sugar and confectionery • Technological procedure for the manufacture of spreadable fats and oils • Manufacturing procedures for food additives • Food biotechnology 			
Form(s) of instruction	Lecture			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		3 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Food Technology 2	30	30	30 90
	Total	30	30	30 90
Module examination	Examination requirements			
	Method(s) of assessment (duration)	Final examination (oral)		
	Contribution to the final mark	Final examination based on the lectures (100%)		
	Module retake examination	Final examination (oral)		
Frequency	Summer semester Duration: 1 semester			
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-12	Food Toxicology	3rd sem.	5 CP	
Module description	Food Toxicology			
Module code	MLC-12			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/3 rd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know the relevant residues and contaminants that may come about during the preparation or inappropriate handling of food know and understand toxic mechanisms of action <ul style="list-style-type: none"> be able to conduct risk assessments based on modelling for the absorption of residues and contaminants with food know and understand the current chemical-analytical measurement methods and will be able to evaluate and assess the results of analytical measurements <ul style="list-style-type: none"> be able to estimate the potential risk brought about by the presence of residues and contaminants in food based on food legislation and to act accordingly in an advisory capacity to prevent any potential risk 			
Module content	<ul style="list-style-type: none"> Metabolism of residues and contaminants, detoxification and toxification Chemical carcinogenesis Occurrence, biological properties and toxicological assessment of residues and contaminants present in food Occurrence and properties of residues and contaminants which come about during the preparation of food or as a result of inappropriate storage Identification, quantification and communication of risk and risk management of potentially toxic residues and contaminants 			
Form(s) of instruction	Lecture/laboratory			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		5 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration/ revision	C Final examination incl. pre-paration Total
	L Lecture – Food Toxicology	30	30	30 90
	P Laboratory	30	30	60
	Total	60	60	30 150
Module examination	Examination requirements	Regular attendance at laboratory/successful solution of lab assignments/laboratory reports		
	Method(s) of assessment (duration)	Final examination (oral)		
	Contribution to the final mark	Final examination based on the lectures and the laboratory (100%)		
	Module retake examination	Final examination (oral)		
Frequency	Winter semester	Duration: 1 semester		
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-13	Molecular Sensory Analysis	3rd sem.	3 CP	
Module description	Molecular Sensory Analysis			
Module code	MLC-13			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/3 rd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know the biological basis for perceptions of taste and smell understand the physical basis for flavour release be able to assess food in terms of taste and smell are familiar with modern principles of analysis of flavours, flavourings and flavour enhancers 			
Module content	<ul style="list-style-type: none"> Taste and smell receptors Odour binding proteins Flavour release Practical investigations of taste and smell (threshold test; triangle test) GC olfactometry 			
Form(s) of instruction	Lecture/laboratory			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		3 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Molecular Sensory Science	15	15	30 60
	P Laboratory	15	15	30
	Total	30	30	30 90
Module examination	Examination requirements	Regular attendance at laboratory/successful solution of lab assignments/laboratory reports		
	Method(s) of assessment (duration)	Final examination (oral)		
	Contribution to the final mark	Final examination based on the lectures and laboratory (100%)		
	Module retake examination	Final examination (oral)		
Frequency	Winter semester	Duration: 1 semester		
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-14	Immunological and Molecular Biological Methods of Food Analysis	3rd sem.	4 CP	
Module description	Immunological and Molecular Biological Methods of Food Analysis			
Module code	MLC-14			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/3 rd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> know immunological and molecular biological analytical procedures to investigate food of animal and plant origin be able to put these procedures into practice and to evaluate the results in terms of food law provisions know the biologic basis of food allergies be able to identify and, if applicable, quantify genetically modified food or food additives 			
Module content	<ul style="list-style-type: none"> Basic principles of allergology Monoclonal antibodies PCR/Real-time PCR Electrophoreses and blotting procedures ELISA 			
Form(s) of instruction	Lecture/laboratory			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		4 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	L Lecture – Immunological and Molecular Biological Methods of Food Analysis	15	15	15 45
	P Laboratory	45	30	75
	Total	60	45	15 120
Module examination	Examination requirements	Regular attendance at laboratory/ successful solution of lab assignments/laboratory reports		
	Method(s) of assessment (duration)	Final examination (oral)		
	Contribution to the final mark	Final examination based on the lectures and laboratory (100%)		
	Module retake examination	Final examination (oral)		
Frequency	Winter semester Duration: 1 semester			
Intake capacity	20			
Language of instruction	German			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

MLC-15	Project Work (Food Analysis)	3rd sem.	12 CP
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Module description		Project Work (Food Analysis)					
Module code		MLC-15					
Faculty/Subject/Department		08/Food Chemistry/Food Chemistry and Food Biotechnology					
Associated degree course/Semester taken		M.Sc. Food Chemistry/3 rd semester					
Module coordinator		Cf. German version					
Prerequisites		Successful completion of modules MLCO1 - MLC11					
Learning outcomes	The students will						
	<ul style="list-style-type: none"> • be able to prepare an analysis plan for an item of food, an item of animal feed, a commodity or a cosmetic product • be able to plan and conduct the necessary analytical investigations independently • assess the item of food, the item of animal feed, the commodity or the cosmetic product using the chemical parameters obtained • be able to prepare and deliver a lecture on a topical issue in the field of food chemistry independently 						
Module content	<ul style="list-style-type: none"> • Preparation of an analysis plan • Conduct of a complete investigation and analysis • Compilation of the results and assessment of the item of food, item of animal feed, commodity or cosmetic product • Research of the literature (ISI Web of Knowledge, SciFinder, FSTA, analytical abstracts, etc.) • Lecture as part of the seminar programme for food chemistry 						
Form(s) of instruction		Seminar/laboratory					
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit			12 CP		
	Course type and title	A Formal instruction		B Auto-nomous work	C Final examination		
		a Contact hours	b Preparation / revision		incl. preparation		
					Total		
		S Seminar	30	30	45	15	120
P Laboratory	120	120			240		
		Total	150	150	45	15	360
Module examination	Examination requirements						
	Method(s) of assessment (duration)	Complete investigation and analysis report/seminar lecture (20 min.)					
	Contribution to the final mark	Successful completion of the practical assignment & complete investigation and analysis report (70%)/lecture (30%)					
	Module retake examination	Complete investigation and analysis report/seminar lecture (20 min.)					
Frequency		Winter semester		Duration: 1 semester			
Intake capacity		20					
Language of instruction		German					
Additional information		Module guidance and literature: see notice board/Dates: see course catalogue					

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MLC-16	Additional Qualification/Compulsory Elective Module			3rd sem.	6 CP	
Module description	Additional Qualification/Compulsory Elective Module					
Module code	MLC-16					
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology					
Associated degree course/Semester taken	M.Sc. Food Chemistry/3 rd semester					
Module coordinator	Cf. German version					
Prerequisites						
Learning outcomes	Acquisition of additional qualifications by focussing on an individual area in Natural or Engineering Sciences or in Humanities					
Module content	Compulsory elective modules can be selected, for example, from M. Sc degree courses in Chemistry, Material Sciences or Nutritional Sciences. In general, selection can also be made from the whole range of interdisciplinary courses on offer from JLU or individual faculties.					
Form(s) of instruction	Lecture/seminar/laboratory/tutorials					
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit			6 CP	
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration/ revision	C Final examination incl. pre-paration	Total	
	L	see the respective course description				
	S	see the respective course description				
	T	see the respective course description				
	p	see the respective course description				
	Total					180
Module examination	Examination requirements	None				
	Method(s) of assessment (duration)	As stated by the respective course description				
	Contribution to the final mark	As stated by the respective course description				
	Module retake examination	As stated by the respective course description				
Frequency	Winter semester, summer semester		Duration: 1 semester			
Intake capacity						
Language of instruction	German or English					
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue					

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MLC-17	Master Thesis	4th sem.	30 CP	
Module description	Master Thesis			
Module code	MLC-17			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry/4 th semester			
Module coordinator	Cf. German version			
Prerequisites	Successful completion of modules MLC1 - MLC15			
Learning outcomes	The students should acquire the necessary skills to apply scientific methods in completing a practical assignment in a field of work in food chemistry and to present and defend their results as a piece of scientific work.			
Module content	<ul style="list-style-type: none"> • Familiarization with the scientific literature (as a rule in English) • Formulation of a working plan • Development of analytical and evaluative methods • Implementation and evaluation, discussion of the results • Preparation of the thesis • Presentation and defence of the results 			
Form(s) of instruction	Whole-day instruction on conducting scientific work			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		30 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	Instruction on conducting independent scientific work	780		120 900
	Total	780		120 900
Module examination	Examination requirements	Regular attendance at staff seminar		
	Method(s) of assessment (duration)	Master Thesis /disputation (lecture)		
	Contribution to the final mark	Master Thesis (70%)/disputation (30%)		
	Module retake examination	If the Master Thesis does not attain the required standard, a new version may be prepared in accordance with Section 34 (2) sentence 2 of the General Regulations		
Frequency	Winter semester, summer semester Duration: 1 semester			
Intake capacity	20			
Language of instruction	German or English			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			

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MLC-18	Compulsory Elective Module – Instrument-based Procedures in Biochemical and Trace Analysis for Advanced Students			6 CP
Module description	Compulsory Elective Module – Instrument-based Procedures in Biochemical and Trace Analysis for Advanced Students			
Module code	MLC-18			
Faculty/Subject/Department	08/Food Chemistry/Food Chemistry and Food Biotechnology			
Associated degree course/Semester taken	M.Sc. Food Chemistry, M. Sc. Food Chemistry/3 rd semester			
Module coordinator	Cf. German version			
Prerequisites				
Learning outcomes	<p>The students will</p> <ul style="list-style-type: none"> learn sophisticated methods of analysis and work in fields of work in food biochemistry & food biotechnology acquire in-depth knowledge of analytical quality assurance and of GLP present the results of their research in the form of a report 			
Module content	<ul style="list-style-type: none"> Research-related methods in modern food chemistry Trace and other sophisticated methods of analysis in food chemistry One-dimensional and multidimensional electrophoresis Blotting procedures 			
Form(s) of instruction	Laboratory (7 hours/week) Seminar (0.4 hours/week)			
Workload in hours	Total workload in hours	30 hours = 1 ECTS credit		6 CP
	Course type and title	A Formal instruction a Contact hours	B Auto-nomous work b Pre-paration / revision	C Final examination incl. pre-paration Total
	S Seminar	6	12	18
	P Laboratory	108	54	162
	Total	114	66	180
Module examination	Examination requirements			
	Method(s) of assessment (duration)	Final report		
	Contribution to the final mark	Final report (100%)		
	Module retake examination	Final report		
Frequency	Winter semester, summer semester Duration: 1 semester			
Intake capacity	6			
Language of instruction	German or English			
Additional information	Module guidance and literature: see notice board/Dates: see course catalogue			