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BK 01 - Introductory Chemistry Laboratory Course	**1. Sem.; 1./3. Sem.;**	**6 CP**

German Module Title		Einführendes chemisches Praktikum				
Module Coordinator		Prof. Dr. Richard Göttlich				
Prerequisites		None				
Learning Outcomes		The students • are familiar with the fundamentals of laboratory work and the principles of good laboratory practice, • are familiar with fundamental chemical properties, measurement of mass and concentration as well as the nomenclature, • have an overview over the principles and the carrying out of redox reactions and acid-base-reactions (including titrations), • have gained knowledge and abilities in the analysis of ions, inorganic and organic compounds, • can discuss reaction kinetics and catalysis, • understand the composition of organic compounds.				
Module Content		• fundamental chemical properties, measurement and calculation of concentration • acids and bases, pH-value, chemical equilibrium • titrations, salts, buffers • redox reactions, galvanic cells, redox potentials • equilibrium constants, solubility products • complex formation • types of organic compounds, molecule models • stereochemistry of organic compounds • separation methods of organic compounds, chromatography • analysis of organic compounds • natural substances and macromolecules				
Forms of Instruction		Lecture (30%), Seminar (30%), Laboratory Work (40%)				
Workload in hours		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	24	24			
	Seminar	24	24			
	Practical Training/ Laboratory	32	32			
	Exercises					
	Excursion					
	Homework					
		80	80		20	**180 / 6 CP**
Mdule examination	Form(s) of assessment	a) written examination (required: laboratory work successfully completed) or b) examination defined by the lecturer (see Special Regulation SpezO § 8).				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		600				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb08/chemie/organische-chemie/AGGoettlich				

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BK 02 - Biology					**1. Sem.;**	**6 CP**
German Module Title	Biologie					
Module Coordinator	Prof. Dr. Volkmar Wolters					
Prerequisites	None					
Learning Outcomes	Die Studierenden • are familiar with the fundamentals of botany, zoology and microbiology and are able to classify and understand the botanic, zoological and microbiologic questions which arise within their subject area.					
Module Content	• hypotheses regarding the origin of life; primal atmosphere; evolution, endosymbiotic theory • structures and functions of the prokaryotic cell • universal genealogical tree of organisms, phylogenetics of bacteria and archaea, diversity of prokaryotes • mushrooms, viruses • metabolism of micro-organisms: breathing processes, fermentation, chemotrophy and phototrophy • microbial growth • composition of animal and plant cells; cell division; cell identification, cell discrimination; mutability; differentiation, heredity; immunity • receptors and the sensory system; transmission of stimuli and impulses; nervous systems; hormones • functional morphology of tissue, organs and organic systems • ingestion and the gastrointestinal tract • gas cycle, water and salt resources; excretion – secretion; ion acceptance; mass transport • autotrophy – heterotrophy • synthesis activity and metabolism of plants and animals • food webs; parasitic diseases – symbioses • reproduction methods and development; growth • growth plans for plants and animals • systematics of flora and fauna					
Forms of Instruction	Lecture (100%)					
Workload in hours	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	60	90				
Seminar						
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation SpezO § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency	WiSe			Duration 1 Semester		
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb08/biologie/tsz/tieroekologie					

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BK 03 - Economics and Business Management I	**1. Sem.; 3. Sem.;**	**6 CP**

German Module Title		Volkswirtschaftslehre und Betriebswirtschaftslehre I				
Module Coordinator		Prof. Dr. Roland Herrmann				
Prerequisites		None				
Learning Outcomes		The students • have a clear overview of the basic concepts of consumer theory, of the theory of production and price and their meaning for the analysis of the economic process; • realise how governmental interference in market economics can be justified and evaluated with a welfare economic strategy; • know how the achievement and economic potential of entire national economies can grow and what such growth is dependent upon; • are capable of naming and explaining the most important functional areas of companies; • understand how management decisions in production, finance, investment and sales planning can be derived from aims of the company.				
Module Content		• consumer theory • corporate theory • market prices • role of the government • basics of welfare economics • national accounts • consumption and saving • investment and growth • employment and income • money and currency • terms and main functional areas of a factory • decision process and level of information • microeconomic systems • goal setting and goal hierarchy • corporate governance and management systems • organisation structuring and human resource management • production management in a company • financial processes in a company • fundamental approaches to sales planning				
Forms of Instruction		Lecture (80%), Practical Training (20%)				
Workload in hours		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	48	90			
	Seminar					
	Practical Training/ Laboratory	12				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8).				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repeat / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/prof-mae				

BK 05 - Mathematics and Statistics	**1. Sem.; 1./3. Sem.;**	**6 CP**

German Module Title		Mathematik und Statistik				
Module Coordinator		Prof. Dr. Matthias Frisch				
Prerequisites		None				
Learning Outcomes		The students • can mathematically solve specialized problems within their degree course, • are familiar with probability theory and the laws of mass phenomena and can apply them, • can interpret and analyse experiments and studies				
Module Content		• set theory • functions of one and several fluctuating matrices and vectors, systems of linear equations Funktionen • differential and integral calculus • probability theory and combinatorics • random variables and distributions • methods of descriptive statistics • test theory and simple testing procedures				
Forms of Instruction		Lecture (50%), Practical Training (50%)				
Workload in hours		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	30			
	Seminar					
	Practical Training/ Laboratory	30	30			
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a)Weekly exercises (12 exercises), written examination or b) examination defined by the lecturer (see Special Regulation § 8).				
	Components of final grade	Tutorial (30 %), written examination (70 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit (Exercises in parallel courses with 20 students)				
Language		German				
Website		http://www.uni-giessen.de/population-genetics				

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BK 06 - Biochemistry I					**2. Sem.;**	**6 CP**
German Module Title	Biochemie I					
Module Coordinator	Prof. Dr. Sven Schubert					
Prerequisites	Successful completion of the modules Biology (BK 02) and Introductory Chemistry Laboratory Course (BK 01)/Cemistry Laboratory Course (BK 43) or General Chemistry (BK 28)					
Learning Outcomes	The students • have theoretical knowledge of biochemical metabolic processes, • are familiar with the interrelationship and analogies of assimilation and dissimilation, • have an overview of the fundamental functions of enzymes and membrane transporters					
Module Content	Biochemical reactions: • enzyme activity • structure and functions of ATP • structure and functions of NAD(P)H • oxidation and reduction • photosynthesis • synthesis and decomposition of carbohydrates • synthesis and decomposition of lipids • structure of biological membranes • nitrogen and sulfur assimilation • synthesis and decomposition of amino acids • structure and functions of proteins • nucleic acids • transcription and translation					
Forms of Instruction	Lecture (75%), Seminar (25%)					
Workload inhours	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	45	60				
Seminar	15					
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) written examination and presentation or b) examination defined by the lecturer (see Special Regulation § 8).					
Components of final grade	Written examination (75 %), presentation (25 %) Module completion requires a successfully passed written exam.					
Form of module component retake examination						
Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency	SuSe		Duration 1 Semester			
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/plant-nutrition/					

BK 07 - Anatomy and Physiology I	**1./3. Sem.; 3. Sem.;**	**6 CP**

German Module Title		Anatomie und Physiologie I				
Module Coordinator		Prof. Dr. Wolfgang Skrandies				
Prerequisites		None				
Learning Outcomes		The students • have knowledge of the fundamentals of cytology, histology as well as microscopic and macroscopic anatomy in relation to human nutrition and metabolism, • are familiar with the function of selected human organ systems.				
Module Content		Anatomy • structure of the human body regions • locomotor system • kidneys and urinary system • heart and circulatory system • digestive tract and adjacent organs • immune system, lymphatic tissues • overview of sensory organs and nervous system as well as respiratory system Physiology • basic principles of physiological processes • endocrine regulatory circuits • heart and circulation • nervous and sensory physiology • muscle physiology				
Forms of Instruction		Lecture (80%), Practical Training (20%)				
Workload in hours		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	48	30			
	Seminar					
	Practical Training/ Laboratory	12				
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8).				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		350				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb11/institute/physiologie/forschung/skrandies				

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BK 08 - Operational Production Management	**2. Sem.; 4. Sem.;**	**6 CP**

German Module Title		Betriebliche Produktionsökonomie				
Module Coordinator		Prof. Dr. Joachim Aurbacher				
Prerequisites		None				
Learning Outcomes		The students • Have knowledge of the methods of agricultural process engineering and are familiar with scientific research in this field, • have knowledge of the production theory, • have knowledge of and the ability to configure and manage the significant branches of production in agricultural enterprises, • are familiar with the techniques for solving decision problems in product planning concerning the definition of the production programme in accordance with environmental and economic conditions, • have knowledge of the economic structure of the significant agricultural branches of production				
Module Content		• production and cost functions with variable production factors • Internal and external accounting • techniques for solving decision-making problems in product planning with the help of plan-cost-efficiency calculations • definition of the relative advantages of alternative courses of action in and between the branches of production • methods of business and corporate planning • decision problems for agricultural production procedures • operational basics of plant production and livestock farming • Evaluation of non-marketable services and products				
Forms of Instruction		Lecture (67%), Exercises (27%), Excursion (7%)				
Workload in hours		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	16	10			
	Excursion	4				
	Homework					
		60	70	20	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ibae/Agrarwirtschaft				

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BK 09 - Economics of the Private Household					**2. Sem.;**	**6 CP**
German Module Title	Wirtschaftslehre des Haushalts					
Module Coordinator	Prof. Dr. Uta Meier-Gräwe					
Prerequisites for Participation	None					
Learning Outcomes	The students • learn to logistically distinguish (demand-orientated) scientific concepts from classical economic approaches and to put them into a socio-political context, • can demonstrate the social importance of the performance of private households (national accounts household production satellite system, gender GDP), • can evaluate household processes from an economic point of view • are familiar with the most significant household functions					
Module Content	• historical household studies • fundamentals of methods for the evaluation of household production • different approaches of demand-orientated logistic sciences versus acquisition economy • household morphology • principles of household organisation					
Forms of Instruction	Lecture (100%)					
Workload in hours	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	60	30				
Seminar						
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	30	60	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency	SuSe			Duration 1 Semester		
Intake capacity	No limit					
Language	German					
Website	http://wi.uni-giessen.de/wps/fb09/home/meier/					

BK 10 - Nutritional Physiology					**3. Sem.;**	**6 CP**
German Module Title	Ernährungsphysiologie					
Module Coordinator	Prof. Dr. Klaus Eder					
Prerequisites	None					
Learning Outcomes	The students • have knowledge of the chemical composition of the body and food and of the methods of their determination. • have knowledge of digestion, transport, metabolism and evaluation of nutrients and can describe the nutritional physiological effects of fibres • have basic knowledge of the energy resources (methods of measurement, parameters, factorial derivation of the energy requirement, steps and efficiency of thermogenesis). • understand tissue-specific metabolic reactions to food, hunger and fasting. • have basic knowledge of important food sources, bioavailability, supply, functions and deficiency symptoms of vitamins and minerals. • have knowledge of nutritional physiological methods (balance, kinetic studies, biochemical and physiological markers). • are familiar with the relationship between nutrition and health.					
Module Content	Constituents of the body and of food • general and methodical concepts of nutritional physiology • carbohydrates, proteins, nucleic acids and lipids: digestion, absorption, metabolism, physiological impact, nutritional physiological evaluation. • energy balance: methodology, degrees and efficiency of energy utilization, regulation of body temperature • vitamins and minerals (quantities and trace elements): characteristics, food constituents, biological efficiency, functions and deficiencies, functions and deficiencies, diagnosis of status					
Forms of Instruction	Lecture (100%)					
Workload in hours	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	60	90				
Seminar						
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency	WiSe			Duration 1 Semester		
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/tierernaehrung/					

BK 11 - Plant-based Foods	**3. Sem.; 3./5. Sem.;**	**6 CP**

German Module Title		Pflanzliche Lebensmittel				
Module Coordinator		Prof. Dr. Gertrud Morlock				
Prerequisites for Participation		None				
Learning Outcomes		The students • have basic knowledge of ingredients, quality attributes and quality standards of important indigenous primary food resources, • are familiar with the most important groups of foodstuffs, their extraction from the respective plant-based raw materials and their ingredients, • have knowledge of the purpose and aims as well as the technologic methods of treating and processing plant-based foods, • are familiar with the methods for eliminating unwanted compounds, • have knowledge of the sensory criteria for the evaluation of plant based foods.				
Module Content		• Meaning, consumption and occurrence of plant-based primary food resources for the production of foods, outer and inner quality characteristics as well as ingredients of important plant-based foodstuffs, • Sensory assessment of plant-based food with exercises and insight into methods of sensory evaluation, • Tropical and indigeneous grain, bread grain, brewing grain, Bread, yeast, maillard reaction, grain ingredients and mykotoxins, • Sugar and starch-containing plants, ware potatos, starch, cane sugar, beet sugard, saccharins • High-protein plants, legumes and ingredients as well as soya products, • Oil-plants, vegetable fats and oils and how to treat and process them (refining, fractionation, hydrogenation and transesterification) as well as margarine production, • Fruits and vegetables, tropical fruits, secondary phytomutrients and plant pigments (Curcuminoide, Betalaine, Carotinoide, Anthocyane, Flavonoide, Chlorine etc.), • Luxury food (coffee, cocoa, tea, tobacco etc.), spices (e.g. paprika, pepper, ginger, vanilla cinnamon and nutmeg),table vinegar as well as alcoholic fermented food (e.g. beer and spirituous beverages)				
Forms of Instruction		Lecture (83%), Practical Training (17%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	50	30			
	Seminar					
	Practical Training/ Laboratory	10				
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/food				

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BK 12 - Human Food of Animal Origin	**3. Sem.; 3./5. Sem.;**	**6 CP**

German Module Title		Lebensmittel tierischer Herkunft				
Module Coordinator		Prof. Dr. Sven König				
Prerequisites for Participation		None				
Learning Outcomes		The students • have coherent knowledge of the biological basics and methods for producing food of animal origin, • know the quality factors and what affects them in agricultural enterprises, • are capable of estimating the influence of breeding and husbandry on product quality under conventional and ecological production conditions.				
Module Content		• production forms and procedures for cows, pigs, poultry, sheep, goats, fish, rabbits • biological quality fundamentals of animal-based foods, • quality factors for meat, milk, eggs • requirements of the customer and the processing • influence of breeding and husbandry on product quality • conventional cultivation/ecological cultivation/genetic engineering • legal conditions				
Forms of Instruction		Lecture (90%), Practical Training (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	54	90			
	Seminar					
	Practical Training/ Laboratory	6				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_erhardt/index.htm				

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BK 13 - Human Nutrition					**4. Sem.;**	**6 CP**
German Module Title		Ernährung des Menschen				
Module Coordinator		Prof. Dr. Monika Neuhäuser-Berthold				
Prerequisites for Participation		Introductory Chemistry Laboratory Course (BK 01), Biology (BK 02), Biochemistry I (BK 06), Anatomy and Physiology (BK 07), Nutritional Physiology (BK 10)				
Learning Outcomes		The students have basic knowledge • of the functions and the metabolism of essential nutritients in human beings dependent on age and different physiological and pathophysiological conditions, • of the occurrence and the availability of nutrients in food and of the nutrient supply within the realm of nutrition • of the health effects of nutrient deficiency and of plentiful nutrient supply, • of analysing and determining the nutrient supply state, • of the recommendations concernin • g nutrient supply and of the demand fulfilment of the population; and can apply this knowledge in different areas of professional life.				
Module Content		• The human body and its composition • energy balance and its regulation • essential nutritients				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/neuhaeuser-berthold				

BK 14 - Policy and Markets in the Agricultural and Food Economy	**2. Sem.; 4. Sem.; 4./6. Sem.;**	**6 CP**

German Module Title	Politik und Märkte der Agrar- und Ernährungswirtschaft
Module Coordinator	Prof. Dr. Roland Herrmann
Prerequisites	None (recommended: Mathematics and Statistics (BK 05), Economics and Business Management I (BK 03))
Learning Outcomes	The students • can explain supply, demand and price formation on markets within the agricultural and food economy; • are aware of the interdependence of these markets; • can explain structural developments in the food industry; • know which basic economic problems of the food sector make political-economic action necessary; • understand the aims of using economic instruments, their effects and how they can be evaluated in comparison to alternatives.
Module Content	Markets: • demand, supply and price formation of goods in the agricultural and food economy • intertemporal, interregional and vertical price connection between the markets of the food industry • quality and price formation in the food industry • structural changes in the food industry: description and causes • governmental influence on markets of processed food Policy: • explaining sector change in structure and income disparity • politics and market failure in agricultural and food policy • objectives, instruments and institutions of agricultural, food and consumer policy • impact analysis and evaluation of selected instruments of agricultural and food policy • basics and financing of agricultural policy in the EU • agricultural reforms and current problems in the food sector
Forms of Instruction	Lecture (67%), Practical Training (33%)

Workload						
		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	90			
	Seminar					
	Practical Training/ Laboratory	20				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**

Module examination		
	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)
	Components of final grade	Written examination (100 %)
	Form of module component retake examination	
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)

Frequency	SuSe	Duration 1 Semester
Intake capacity	No limit	
Language	German	
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/prof-mae	

BK 20 - Production and Operations Management in the Food Economy	**2. Sem.; 2./4./6. Sem.;**	**6 CP**

German Module Title		Betriebliches Produktionsmanagement in der Ernährungswirtschaft				
Module Coordinator		Prof. Dr. Rainer Kühl				
Prerequisites for Participation		None (recommended: Mathematics and Statistics (BK 05), Economics and Business Management I (BK 03))				
Learning Outcomes		The students • understand the basic corporate decision areas of the strategic and operational production management in the food industry, • understand the procedures of production management and can evaluate alternative solutions, • can assess theoretical as well as practical problems and find a concrete solution.				
Module Content		• production and organisational arrangements in processing enterprises • quantitative concepts for solving capacity problems in different decision and planning areas of the medium-size food industry • quantification of strategic decision problems in different areas of activity • organisational change of enterprise structures and processes • model-based company planning for quality production, for project- and personnel planning; business field analyses and budgeting •				
Forms of Instruction		Lecture (70%), Practical Training (30%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	42	90			
	Seminar					
	Practical Training/ Laboratory	18				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ibae/foodeconomics				

BK 21 - Crop Production						**3. Sem.;**	**6 CP**
German Module Title		Nutzpflanzenproduktion					
Module Coordinator		Prof. Dr. Bernd Honermeier					
Prerequisites		None (recommended: knowledge of biology/botany)					
Learning Outcomes		The students • have a basic knowledge of soil use, the study of species and the cultivation of annual and perennial cultivated plants of farm- and grassland, • understand the interrelation of crop production methods					
Module Content		• location factors and fundamentals of agricultural soil use • fundamental principles of arable farming: crop rotation, soil cultivation, humus reproduction • biological basics, characteristics and use of the most important plant species (corn, legumes, oil-yielding plants, root and tuber crops, specialized cultivation), methods of cultivation , • cultivation of important agricultural crop • study of grassland and agricultural forage production (habitat requirements, grass sorts, utilisation of grassland, characteristics, importance and use of agricultural forage crops)					
Forms of Instruction		Lecture (100%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	60	90				
	Seminar						
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Lecture (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://wi.uni-giessen.de/wps/fb09/home/Honermeier/					

BK 22 - Animal Nutrition						**3. Sem.;**	**6 CP**
German Module Title		Tierernährung					
Module Coordinator		Prof. Dr. Klaus Eder					
Prerequisites for Participation		None (recommended: Biochemistry I (BK 06)					
Learning Outcomes		The students • are able to describe digestion and metabolic utilization of the main nutrients. • are familiar with the properties of energy utilization and of the energy evaluation systems, • have an overview of the origin, quality characteristics, quality control, conservation and use of foodstuffs. • know the main points of animal feed law. • are able to formulate feed rations for farm animals and know how to use them with various feeding systems. • know the relationship between nutrition and animal performance, emission of nutrients, animal health and product quality.					
Module Content		• Nutrition physiology of livestock animals • chemical composition of food and animal body • digestion and utilization of nutrients (carbohydrates, proteins, lipids) • energy utilization and energy evaluation systems • minerals and vitamins (functions, metabolism and distribution, supply) • characterization of feedstuffs and basic knowledge of the feed law • basics of animal feed conservation and storage • livestock nutrition • needs of animals for energy and nutrients in the phases of growth, reproduction and the fattening period • feeding strategies and formulation of feed rations • influence of nutrition on animal performance animal performance, emission of nutrients, animal health and product quality					
Forms of Instruction		Lecture (100%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	60	90				
	Seminar						
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/tierernaehrung/					

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BK 23 - Public Health Nutrition					**4. Sem.; 4./6. Sem.;**	**6 CP**
German Module Title		Public Health Nutrition				
Module Coordinator		Prof. Dr. Gunter P. Eckert				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain knowledge of the fundamentals and the general conditions of the practical developments and discussions in the area of public health and health promotion on a national and international level; • are familiar with the basic terms and methods of epidemiology of nutritional disorder and diseases and can analyse problem situations epidemiologically; • gain an overview of from a content point of view interconnected programmes of health promotion and prevention concerning public health and nutrition (Public Health Nutrition Approach) in different European countries; • will have the ability to develop and apply the Public Health Nutrition Approach in their own occupational path.				
Module Content		• basic concepts of public health and health promotion (historical development, theoretical basics, current institutional characteristics, socio-economic effects) • basics of applied epidemiology • prerequisites in the form of content and methods for fields of work and strategies in the professional areas of health promotion, food information and advice				
Forms of Instruction		Lecture (75%), Seminar (25%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	45	30			
	Seminar	15				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination and poster presentations or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (75 %), Poster Presentations (25 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/krawinkel				

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BK 24 - Plant Nutrition						**3. Sem.;**	**6 CP**
German Module Title		Pflanzenernährung					
Module Coordinator		Prof. Dr. Sven Schubert					
Prerequisites for Participation		Introductory Chemistry Laboratory Course (BK 01) and Biology (BK 02)/(highly recommended: Biochemistry I (BK 06))					
Learning Outcomes		The students • have fundamental knowledge in the subject area of plant nutrition as a prerequisite for understanding and applying academic and practical working methods in the field of crop production.					
Module Content		• definition and classification of plant nutrients • physiological characteristics and functions of plant nutrients • nutrient acquisition of plants • yield formation and plant quality • biological nitrogen fixation • nutrient assimilation • nutrient cycles • nutrient availablitity in soils • soil and plant analysis • nutrient balance • fertilizers and fertilizer application					
Forms of Instruction		Lecture (75%), Seminar (25%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	45	60				
	Seminar	15					
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination and active participation in the seminar or b) Examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (75 %), active participation in the seminar (25 %). Module completion requires having successfully passed the written exam.					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		200					
Language		German					
Website		http://www.uni-giessen.de/plant-nutrition/					

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BK 25 - Plant Pathology					**3. Sem.;**	**6 CP**
German Module Title		Phytomedizin				
Module Coordinator		Prof. Dr. Karl-Heinz Kogel				
Prerequisites for Participation		None (recommended: Introductory Chemistry Laboratory Course (BK 01) and Biology (BK 02)9				
Learning Outcomes		The students • have fundamental knowledge of phytomedicine as a prerequisite for understanding and applying academic and practical working methods in crop production and crop protection industry				
Module Content		• fundamental knowledge of plant protection in crop production • fundamental knowledge of the plant immune system • fundamental knowledge of plant morphology • systematics of pest arthropods and nematodes • fundamentals knowledge of plant biotechnology • fundamentals knowledge of mechanisms of plant protection products				
Forms of Instruction		Lecture (50%), Seminar (40%), Excursion (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	50			
	Seminar	24	32			
	Practical Training/ Laboratory					
	Exercises					
	Excursion	6				
	Homework		8			
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination and presentation in the seminar (each part must be sufficient) or b) Examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (75 %), seminar presentation (25%)				
	Form of module component retake examination	Repetition / Revision of the failed module component				
	Form of module retake examination	Written or oral examination repetition or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/ipaz				

BK 26 - Housing and Ecology of Farm Animals						**2./4. Sem.;**	**6 CP**
German Module Title		Tierhaltung und Nutztierökologie					
Module Coordinator		Prof. Dr. Steffen Hoy					
Prerequisites for Participation		None					
Learning Outcomes		The students • have fundamental knowledge regarding the breeding of cows, pigs, small ruminants, horses and poultry, • are familiar with the legal fundamentals of animal welfare, • have knowledge of the basics of animal behaviour, • are familiar with the basic principles of farm animal ecology, • have knowledge of important herd diseases of agrarian livestock, • have knowledge of the structural facilities in livestock farming.					
Module Content		• farming of milk cows, calves, mother cows, pigs, sheep, goats, horses and poultry • basics of breeding techniques • laws of animal welfare • abiotic fundamentals of animal hygiene (barn climate, birth and newborn hygiene) • breeding methods for livestock in consideration of species, race, location, production methods and product quality • basics of animal behaviour • structural facilities for livestock farming					
Forms of Instruction		Lecture (90%), Seminar (10%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	54	90				
	Seminar						
	Practical Training/ Laboratory	6					
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) Examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Klausur (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		SoSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_hoy/index.htm					

BK 28 - General Chemistry					**1. Sem.;**	**6 CP**
German Module Title	Allgemeine Chemie					
Module Coordinator	Prof. Dr. Richard Göttlich					
Prerequisites for Participation	None					
Learning Outcomes	The students • are familiar with the basic concepts of chemistry such as: periodic table, formula language, units, stoichiometric calculating, • understand the basic principles of inorganic (acids and bases, redox) and organic (functional groups) chemistry, • have an overview of the material characteristics of elements and compounds of the important main group elements, • understand the basic principles of organic chemistry (functional groups, reactivity, nomenclature), • have a consolidated knowledge of the most important chemical reactions in inorganic and organic chemistry.					
Module Content	• Atomic and molecular structure, periodic table, elements in nature, introduction to selected s- and p-block elements, chemical bonds, reaction equations, stoichiometry • chemical properties, solutions, mixtures, osmosis • acid-base-reaction; buffer solutions; pH-value • redox reactions, redox potentials, electrochemistry • chemical equilibrium/thermodynamics/catalysis • basic terms of spectroscopy • organic molecules: chemistry of functional groups and their basic reaction mechanisms, alkanes, alkenes, alkynes, ethers, aldehydes and ketones, carboxylic acids and their derivatives, aromatics, structures of selected natural materials (sugars, peptides, alkaloides, prostaglandins, nucleotides, steroids, vitamins) • • organic-chemical reaction mechanisms, basic terms of stereochemistry					
Forms of Instruction	Lecture (80%), Exercises (20%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	60	60				
Seminar						
Practical Training/ Laboratory						
Exercises	15	20				
Excursion						
Homework						
	75	80		25	**180 / 6 CP**	
Module examination – Form(s) of assessment	Prerequisite: at least 50% of all possible points in exercises a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
Components of final grade	Written examination (100%)					
Form of module component retake examination						
Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency	WiSe und SoSe		Duration 1 Semester			
Intake capacity	500					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb08/chemie/organische-chemie/AGGoettlich					

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BK 29 - Practical Course in Food Sciences					**4. Sem.;**	**6 CP**
German Module Title		Ernährungswissenschaftliches Praktikum				
Module Coordinator		Prof. Dr. Uwe W				
Prerequisites for Participation		all scientific core modules of the first four semesters				
Learning Outcomes		The students • have basic theoretical knowledge of the deDateation of physiological parameters, • are familiar with chromatographic separation processes, • have basic knowledge of molecular and cytological techniques, • have the ability to apply fundamental methods of experimental analyses.				
Module Content		• fundamentals of laboratory work (chemical and physical properties, dilution, concentrations, molarities, pH-value, buffering capacity, photometry and its practical application: measuring, weighing, pipetting, centrifuging • treatment of biological samples, working in a sterile environment • Detection of carbohydrates, lipids, proteins • Datection of vitamins, physiological parameters (urea, creatinine, haemoglobin) • intestinal transporting processes, glucose homeostasis (oral glucose tolerance test, deDateation of insulin and glucose in the blood) • evidence of enzyme genes and their mRNAs with PCR, enzyme kinetics				
Forms of Instruction		Lecture (20%), Laboratory (80%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	12				
	Seminar					
	Practical Training/ Laboratory	48	90			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		Not limited for Bachelor Nutritional Sciences				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/wenzel				

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BK 30 - Pathobiochemistry					**4. Sem.;**	**6 CP**
German Module Title		Pathobiochemie				
Module Coordinator		Prof. Dr. med. Katja Becker				
Prerequisites for Participation		General Chemistry (BK 28), Biochemistry I (BK 06), Introductory Chemistry Laboratory Course (BK 01), Physics (BK 31), Anatomy/Physiology I (BK 07)				
Learning Outcomes		The students • have an overview of the intermediate metabolism • understand diseases relevant to nutritional sciences and their underlying pathomechanisms, • have an understanding of the therapeutic procedures derived from pathobiochemistry as well as their nutritional supplementation.				
Module Content		• molecular fundamentals of digestion disorders and absorption of food components • hormonal regulation of the intermediate metabolism and its related disorders • disorders in the amino acid metabolism • disorders in the lipid metabolism (hyperlipoproteinaemia) and resulting illnesses (arteriosclerosis), significance of the adipose tissue as an endocrinal organ for the development of the metabolic syndrome • disorders in the carbohydrate metabolism (e.g. fructosaemia) • disorders in the nucleotide metabolism (Lesch-Nyhan Syndrome, hyperuricaemia) • neurodegenerative diseases (Alzheimer's, prion diseases) • basics of immunology (food allergies, autoimmune diseases) • blood, acid-base-balance (acidosis, alkalosis) • blood clotting and haemoglobinopathies, hereditary anaemia				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	50			
	Seminar	30				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	50	40	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/becker				

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BK 31 - Physics						**2. Sem.;**	**6 CP**
German Module Title		Physik					
Module Coordinator		Prof. Dr. Derck Schlettwein					
Prerequisites for Participation		None					
Learning Outcomes		The students • have knowledge of the fundamental physical quantities, laws and methods, • can solve simple physical problems with mathematical methods • understand the physical fundamentals of biological measurement methods.					
Module Content		• Fundamentals of mechanical science, acoustics, thermodynamics, optics, electricity and magnetism • structure of matter, of radiation and their interaction • aggregate states, dissolutions, osmotic pressure, hydrostatics of fluids and gases, gaseous mixtures, diffusion • energy and entropy					
Forms of Instruction		Lecture (75%), Seminar (25%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	45	60				
	Seminar	15					
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		SuSe		Duration 1 Semester			
Intake capacity		120					
Language		German					

BK 32 - Evaluation of Nutritional Studies					**2. Sem.;**	**6 CP**
German Module Title		Qualitätsparameter ernährungswissenschaftlicher Studien				
Module Coordinator		Prof. Dr. Clemens Kunz				
Prerequisites for Participation		None				
Learning Outcomes		The students • can classify and evaluate studies and experimental investigations, • have an overview of meaning of biomarkers and other properties, • can present their own results in a nutritional-medical context.				
Module Content		• acquisition of the state of research concerning a selected topic with the help of current literature and other academic sources • criteria and strategies of a literature review • classification and evaluation of publications with a focus on nutritional studies • designing of human studies (*in*-vivo and *in*-vitro) • factors of influence on analysis and study results • assessment of biomarkers and investigation methods • procedure for creating manuscripts with the aid of concrete examples which are contributed by the participants • presentation of own results in the form of posters and short oral presentations				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	90			
	Seminar	30				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination, seminar paper (poster presentation) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Oral examination (50%), seminar paper (50 %)				
	Form of module component retake examination					
	Form of module retake examination	oral examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		120				
Language		German				
Website		http://www.uni-giessen.de/fbr09/nutrition				

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BK 33 - General and Molecular Microbiology					**3. Sem.;**	**6 CP**
German Module Title		Allgemeine und molekulare Mikrobiologie				
Module Coordinator		Prof. Dr. Sylvia Schnell				
Prerequisites for Participation		None				
Learning Outcomes		The students • learn about the diversity of microorganisms and their distribution in extreme habitats • know the phylogenetic categories of microorganisms and are able to interpret their pedigrees • gain deeper knowledge on the metabolism diversity of microorganisms • are able to formulate thermodynamic considerations • acquire the basics of bacterial genetics and genetic engineering • gain insight into biotechnology and industrial microbiology • acquire working techniques and methods of microbiology in practical exercises				
Module Content		• diversity and distribution of microorganisms • microbial evolution, systems and taxonomy • metabolic diversity and ecology of microorganisms; respiration processes, fermentations, photosynthesis, chemo lithotrophs, N2- fixation, secondary products • energy calculation and microbial bioenergetics • symbiotic relations to microorganisms • introduction into bacterial genetics and genetic engineering • molecular techniques to record microorganisms • applied examples of microbial biotechnology • introduction to various microbial techniques and presentation of different microorganisms				
Forms of Instruction		Lecture (50%), Laboratory (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	50			
	Seminar					
	Practical Training/ Laboratory	30	20			
	Exercises					
	Excursion					
	Homework					
		60	70	20	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, required: successfully completed laboratory exercises and final questionnaire or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		150				
Language		German				
Website		http://www.uni-giessen.de/fbr09/mikrobiologie/schnell.html				

BK 34 - Applied and Environmental Microbiology					**3./5. Sem.;**	**6 CP**
German Module Title		Angewandte und Umweltmikrobiologie				
Module Coordinator		Prof. Dr. Dr. Peter Kämpfer				
Prerequisites for Participation		None				
Learning Outcomes		The students • have knowledge of the microbiological material cycles, • learn the microbiological and technical fundamentals of ecologically relevant processes of sewage clarification and drinking water production and purification; as well as air pollution control, • are familiar with basic microbiological working methods.				
Module Content		• basic knowledge of applied and environmental microbiology, energy yield, C-, N-, P-cycle, environmental biotechnological applications in the field of material and energy recycling (sewage clarification, drinking water purification, air pollution control) • sterile working, fertile soil; cultivating microorganisms; use of a microscope, types of cells and colonies, microscopy of bacteria and differentiation according to colours, quantifying bacteria and phages; • essential differences and the role of bacterial and fungal groups (Lacto-bacteria, actinomycetes; spore-forming bacteria, yeasts, Fungi imperfecti) in environmental microbiology. • examination of drinking water				
Forms of Instruction		Lecture (50%), Laboratory (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	30			
	Seminar					
	Practical Training/ Laboratory	30				
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		120				
Language		German				
Website		https://www.uni-giessen.de/cms/fbz/fb09/institute/mikrobiologie/recycling-prozesse				

BK 35 - Soil and Landscape Ecology					**2. Sem.;**	**6 CP**
German Module Title	Boden und Landschaftsökologie					
Module Coordinator	Prof. Dr. Dr. Annette Otte					
Prerequisites for Participation	Ecology and Soil Science (BK 39)					
Learning Outcomes	The students • understand the relevance of climate, relief, waterbodies, soils, vegetation, fauna, human population and agriculture for the diversity of the major ecosystems on earth, • understand the genesis and the role of environmental and utilisation properties of soils properties as a basis of life in the different climate and vegetation zones of the earth, • are familiar with the ecological fundamentals for the sustainable use of landscapes.0					
Module Content	• hierarchic organization of ecological systems • ecological classification of the land on earth on the basis of the macroclimate in biomes • abiotic and biotic characterisation of the biomes on earth (climate, relief, waterbodies, soils, vegetation, fauna, resource pools, turnover of material and energy, population, land use, economy) • features of azonal and extrazonal ecosystems • soil-forming factors and processes and resulting soil characteristics in different climate and vegetation zones • relationships between soil characteristics, landscape structure, potential yield and land use • multifunctionality and environmental protection					
Forms of Instruction	Lecture (100%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	60	90				
Seminar						
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	90		30	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) written examinations (two 45-minute partial examinations) or b) examination defined by the lecturer (see Special Regulation § 8)					
Components of final grade	Written examinations (each 50 %)					
Form of module component retake examination						
Form of module retake examination	written examination (respective partial examination) or repetition / revision of the examination as defined in b)					
Frequency	SuSe		Duration 1 Semester			
Intake capacity	no limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/loek					

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BK 36 - Recycling and Waste Management						**3. Sem.;**	**6 CP**
German Module Title		Kreislauf- und Abfallwirtschaft					
Module Coordinator		Prof. Dr. Stefan Gäth					
Prerequisites for Participation		None					
Learning Outcomes		The students • have knowledge of the legal background of recycling and waste management, • have knowledge of instruments and procedures for avoiding and recycling waste, • gain an insight into the methods and instruments of waste management concerning the collection and treatment of specific waste groups, • have knowledge of the handling of waste, of the environmentally compatible deposition of different kinds of waste and the aftercare of waste disposal sites, • are familiar with different techniques of treating waste and sewage (e.g. incinerators, mechanical-biological treatment facilities, composting facility, defecators, etc.), • gain a knowledge of microbiological fundamentals and methods of composting and fermenting organic waste; incl. producing biogas, • can transfer the microbiological basics to different procedures and can evaluate them, • can evaluate the different waste treating techniques economically and ecologically, • gain an insight into practical enterprises of waste management.					
Module Content		• legal conditions (EC directives, laws, regulations, technical policies) • basics of waste management (definitions, waste produced, waste groups, development) • collection of and fee structuring in waste management • procedures of treating and disposing of liquid and solid waste (thermal processes, biological processes, chemical-physical processes) • deposition of residual and hazardous waste (planning, handling and aftercare) • avoiding and recycling waste • role of biology in waste management (basis: biodegradation of natural products; biochemistry and energy production) • composting and fermenting organic waste (basics, requirements, methods, evaluation) • •cost-benefit analysis of different waste treatment techniques • Optional: Certification as an Authorized Specialist for Waste					
Forms of Instruction		Lecture (75%), Excursion (25%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	45	30				
	Seminar						
	Practical Training/ Laboratory						
	Exercises						
	Excursion	15					
	Homework						
		60	30	60	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe			Duration 1 Semester		
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/abfall-und-ressourcenmanagement					

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BK 37 - Basics in Landscape Hydrology					**2. Sem.;**	**6 CP**
German Module Title		Landschaftswasserhaushalt				
Module Coordinator		Prof. Dr. Lutz Breuer				
Prerequisites for Participation		None				
Learning Outcomes		The students • have a fundamental knowledge of the water balance, • are familiar with the significant controlling factors of water, heat, energy and matter transportation in soils, waters and landscape, • can estimate the importance of land use with regard to the water balance and the quality of waters,				
Module Content		• introduction into hydrology • consideration of and methods for the data acquisition of specific properties of the water balance and the quality of water • fundamentals regarding the effect of changes of use on the water and matter balance • irrigation				
Forms of Instruction		Lecture (90%), Excursion (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	54	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion	6				
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/ilr/wasser				

BK 38 - Agriculture and Environment						**2. Sem.;**	**6 CP**
German Module Title		Landwirtschaft und Umwelt					
Module Coordinator		Prof. Dr. Bernd Honermeier					
Prerequisites for Participation		None (recommended: knowledge of biology/botany and soil sciences)					
Learning Outcomes		The students • are familiar with the methods of land use, • understand the cultivation methods for important crops, • recognise the interaction between cultivation systems and the environment, • know the most important types of animal husbandry, • are aware of the effects of animal husbandry on the environment.					
Module Content		• use of agricultural areas • characterisation of crop plants and methods of cultivation • rotation farming as well as seeding and planting methods • aims, methods and effects of cultivation, of mineral and organic fertilisation and plant protection • methods of precision plant production • impacts of climate change on cultivated plants • keeping of cattle, pigs, sheep, goats, horses and poultry • basics of animal husbandry techniques • introduction to procedures for breeding livestock					
Forms of Instruction		Lecture (80%), Practical Exercises (20%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	48	90				
	Seminar						
	Practical Training/ Laboratory	12					
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		SuSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/pbau/					

BK 39 - Ecology and Soil Science					**1. Sem.;**	**6 CP**
German Module Title		Grundlagen der Ökologie und Bodenkunde				
Module Coordinator		Prof. Dr. Jan Siemens				
Prerequisites for Participation		None				
Learning Outcomes		The students • have a fundamental knowledge of soil science as a basis for the agricultural and environmental sciences and as a prerequisite for the understanding and applying of scientific working methods, • understand the functioning of ecosystems work and can recognize systemic connections between land use, biotic and abiotic potential in cultivated landscapes.				
Module Content		• relevance of soil and functions in ecosystems, • soil structure and composition, • physical and chemical soil characteristics, main features of soil systematics, • development, distribution and use of important soil types in Germany, • soil maps and evaluation, • principles of the structure of ecological systems, • biogeochemical cycles, • concept of limiting factors, • population ecology and autecology, • applying the principles of ecologic systems in landscape (cultivated landscape development in central Europe, production and protective systems, concept of differentiated land use), • modelling in landscape ecology.				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination (two 45-minute partial examinations) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	written examinations (each 50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination (respective partial examination) or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/bkbe				

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BK 41 - Pollutants in the Environment						**3. Sem.;**	**6 CP**
German Module Title		Schadstoffe in der Umwelt					
Module Coordinator		Prof. Dr. Rolf-Alexander Düring					
Prerequisites for Participation		None					
Learning Outcomes		The students • have a basic knowledge of the occurrence and characteristics of natural and anthropogenic environmental toxins, • understand the methods for investigating environmental pollutants, • can draw conclusions for the organic and inorganic environment.					
Module Content		• Fundamentals of toxicology, acute and chronic toxic effects • fundamentals of environmental analysis • origin and characteristics of inorganic pollutants in the environment • origin and characteristics of organic pollutants in the environment					
Forms of Instruction		Lecture (100%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	60	90				
	Seminar						
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Lecture (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/bkbe/ag/rad					

BK 42 - Environmental Economics and Communication					**4. Sem.;**	**6 CP**
German Module Title	Umweltökonomie und Umweltkommunikation					
Module Coordinator	Prof. Dr. Ernst-August Nuppenau					
Prerequisites for Participation	None					
Learning Outcomes	The students • are familiar with the fundamental terms of environmental economics, • have an understanding of the environmental problems of agriculture and are familiar with the basics of landscape and environmental protection management, • have knowledge of the media of environmental communication, • can estimate and evaluate the potential effectiveness and mechanisms of media communication, • are familiar with the concepts of abiotic and biotic resource protection, • understand human actions regarding environment and resources, • are familiar with modern communication technologies and their application conditions, • understand the mechanisms of a public discourse.					
Module Content	fundamentals of environmental economics for environmental managers • scarcity as an economic problem • individual human actions and causes of environmental problems • individual aims and social aims in environmental economics • social relevance of resources and collective management: requirements, conflicts and potentials • the resource-efficient approach of environmental economics and policy • the ecological approach of environmental economics • examples of agri-environmental problems • economical evaluation of resources and pollution • multifunctionality and economics of cultivated landscapes • rules for sustainable economic activity and environmental ethics, environmental communication and media • relevance and logic in media coverage • topics of environmental communication • public discourse on environmental problems in mass media • social perception of environmental problems • application examples					
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	30			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		90				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/pau				

BK 43 - Chemistry Laboratory Course						**2. Sem.;**	**6 CP**
German Module Title		Chemisches Praktikum					
Module Coordinator		Prof. Dr. Richard Göttlich					
Prerequisites for Participation		None					
Learning Outcomes		The students • are familiar with the fundamentals of laboratory work and the principles of good laboratory practice, • are familiar with fundamental chemical properties, measurement of mass and concentration as well as the nomenclature, • have an overview over the principles and the carrying out of redox reactions and acid-base-reactions (including titrations), • have gained knowledge and abilities in the analysis of ions, inorganic and organic compounds, • can discuss reaction kinetics and catalysis, • understand the composition of organic compounds.					
Module Content		• fundamental chemical properties, measurement and calculation of concentration • acids and bases, pH-value, chemical equilibrium • titrations, salts, buffers • redox reactions, galvanic cells, redox potentials • equilibrium constants, solubility products • complex formation • types of organic compounds, molecule models • stereochemistry of organic compounds • separation methods of organic compounds, chromatography • analysis of organic compounds, reaction mechanisms • natural substances and macromolecules					
Forms of Instruction		Seminar (30%), Laboratory (40%), Exercises (30%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture						
	Seminar	24	24				
	Practical Training/ Laboratory	32	32				
	Exercises	24	24				
	Excursion						
	Homework						
		80	80	0	20	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination, (required: laboratory work and exercises successfully completed) b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		SuSe		Duration 1 Semester			
Intake capacity		300					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb08/chemie/organische-chemie/AGGoettlich					

BK 44 - Family and Society					**1. Sem.; 3. Sem.;**	**6 CP**
German Module Title		Familie und Gesellschaft				
Module Coordinator		Prof. Dr. Uta Meier-Gräwe				
Prerequisites for Participation		None				
Learning Outcomes		The students • have the ability to differentiate the social functions of family households and apply them to specific areas as e.g. nutrition, education or media, • have knowledge of the different approaches of genealogy, • are familiar with the most important approaches for family and consumer policy in Germany and the EU.				
Module Content		• the functions of the family household in society serve as a basis for this module (economic, ecologic, generative, regenerative function, educative and socialising function) • fundamentals and methods of family, household and consumption research, • analysis and interpretation of data concerning the development of population, families and households, • political and legal framework conditions for family households in Germany and in the EU				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	30			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://wi.uni-giessen.de/wps/fb09/home/meier/				

BK 46 - Animal Breeding					**2. Sem.;**	**6 CP**
German Module Title		Tierzucht				
Module Coordinator		Prof. Dr. Sven König				
Prerequisites for Participation		None				
Learning Outcomes		The students • are familiar with the spectrum of characteristics of livestock (cattle, pig, sheep, goat, horse, poultry), • have knowledge about the organisation and implementation of performance tests, • are aware of the use of breeding methods and breeding plans, • can participate in estimations of breeding valuations and breeding plans.				
Module Content		• history of animal breeding, domestication, natural selection, • genetic fundamentals of animal breeding • requirements for characteristics, origin, distribution as well as special characteristics of livestock species and breeds • breeding procedures, breeding plans including the estimation of breeding values • legal regulations of animal breeding				
Forms of Instruction		Lecture (90%), Practical training (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	54	90			
	Seminar					
	Practical Training/ Laboratory	6				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_erhardt/index.htm				

BK 47 - Genetics and Plant Breeding	**2. Sem.; 2./4. Sem.;**	**6 CP**

German Module Title		Genetik und Pflanzenzüchtung				
Module Coordinator		Prof. Dr. Rod Snowdon				
Prerequisites for Participation		None				
Learning Outcomes		The students • understand the fundamentals of plant genetics including cell and molecular biology as well as the practical application of cell and tissue culture techniques and molecular genetic methods in plant breeding, • have knowledge of the genetics and molecular biology of prokaryotes as well as biotechnological applications, • have specialised biotechnological knowledge in the area of biotechnology as a prerequisite for understanding and applying academic and practical working methods in modern plant production, • have knowledge about animal genetics and molecular biology and biotechnological methods in animal breeding.				
Module Content		• principles of molecular biology of micro-organisms (prokaryotes) and common methods; fundamentals of microbial biotechnology • fundamentals of genetics, biotechnology and molecular biology of animals • fundamentals of genetics and cell and molecular biology of plants; experimental biotechnology in plant breeding • quantitative-genetic basics of plant breeding and breeding methods				
Forms of Instruction		Lecture (75%), Practical training (25%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	45	40			
	Seminar					
	Practical Training/ Laboratory	15	20			
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/ipz/				

BK 49 - Nature and Landscape Management					**4. Sem.;**	**6 CP**
German Module Title		Management von Natur und Landschaft				
Module Coordinator		Prof. Dr. Dr. Annette Otte				
Prerequisites for Participation		None				
Learning Outcomes		Students • understand the connections and correlations between the state and the utilization of nature • are acquainted with the basic principles of acquisition, analysis and evaluation of nature and landscape, • apprehend landscape planning as the focal planning instrument of precautionary action for the nature and the landscape within the spatial planning system, • have knowledge about the correlations between spatial overall planning, landscape planning and planning test-instruments (Flora-Fauna-Habitat impact assessment, strategic environmental testing, environmental impact assessment, impact regulation, green-space planning) at the national level and the level of the European Union, • are able to present the objectives of programs, plans and measures of other disciplines and can evaluate them with regard to conservation and promotion of the productive capacity of the ecosystem				
Module Content		Integrative Nature Conservancy and Sustainable Use • protection of flora and fauna, biological diversity(CBD), • habitat protection, habitat management, Flora-Fauna-Habitat Directive, Natura 2000, • Territorial protection and large-areal protection, monitoring, Nature and Landscape within Plans and Projects • landscape planning, spatial planning in urban areas, green-space planning • impact regulation, transport routes planning, substitution and compensatory measures, • nature conservancy and renewable energies •				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	45			
	Seminar	30	45			
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (50 %), Seminar Paper (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/loek				

BK 50 - Agricultural Engineering I					**1./3. Sem.; 3. Sem.;**	**6 CP**
German Module Title		Landtechnik I				
Module Coordinator		Dr. Karl Wettich				
Prerequisites for Participation		None				
Learning Outcomes		The students • have basic scientific and technical knowledge on the interrelations and the functional principles of the flow of matter, energy and infomation • know technical measures for power development, work, output and power control • have knowledge about construction, installation, usage and optimization of equipment and methods for agriculture and animal husbandry				
Module Content		• types and use of agricultural tractors, motors, transmission, oil hydraulics and power fuels • electrics and electronic control technology • tires and chassis • tillage systems • plant protection und fertilizer technology • devices and equipment for grassland farming • processes of harvesting and conservation • testing of farm equipment • livestock buildings for large animals / pigs • agricultural buildings • location and legal issues • work science in agriculture				
Forms of Instruction		Lecture (67%), Exercises (17%), Excursion (17%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	40			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	10	20			
	Excursion	10				
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				

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BP 001 - Biochemistry II					3./4. Sem.;	6 CP
German Module Title	Biochemie II					
Module Coordinator	Prof. Dr. Sven Schubert					
Prerequisites for Participation	Biochemistry I (BK 06)					
Learning Outcomes	The students • have practical knowledge of the analysis of inorganic ions, carbohydrates, amino acids, organic acids, proteins and nucleic acids, • are familiar with quantitative analysis techniques, • have knowledge of the most important analytical methods, • are familiar with the principles of enzymatic analyses. • can record the developed measurement results and interpret them scientifically					
Module Content	• pH-value • titration • photometry • atomic absorption spectroscopy • ion exchange chromatography • enzymatic methods • thin-layer chromatography • extraction, quantification and segregation of proteins • gel electrophoresis					
Forms of Instruction	Seminar (25%), Laboratory (75%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar	15	30				
Practical Training/ Laboratory	45	60				
Exercises						
Excursion						
Homework						
	60	90		30	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) written examination, exercises, 12 laboratory reports or b) examination defined by the lecturer (see Special Regulation § 8)					
Components of final grade	Written examination (25 %), Exercises (50 %),Reports (25 %)					
Form of module component retake examination						
Form of module retake examination	Oral examination or repetition / revision of the examination as defined in b)					
Frequency	WiSe und SuSe		Duration 1 Semester			
Intake capacity	64					
Language	German					
Website	http://www.uni-giessen.de/plant-nutrition/					

BP 003 - Age-specific Nutrition					**5. Sem.;**	**6 CP**
German Module Title		Altersspezifische Ernährung				
Module Coordinator		Prof. Dr. Monika Neuhäuser-Berthold				
Prerequisites for Participation		Human Nutrition (BK 13)				
Learning Outcomes		The students • have fundamental knowledge of the nutritionally relevant particularities in infancy and childhood as well as concerning ageing and old persons, • have knowledge of the specific nutritional requirements in these life stages and are able to transfer this knowledge to an applied, suitable diet; • have knowledge of the interrelationship between diet and the ageing process as well as their relevance concerning the demographic change.				
Module Content		• specific nutritional requirements of newborn and premature babies • physiology of breast milk nourishment • diet of a healthy baby and toddler • diet of an ill baby and toddler • principles of nutrition in pre-school and school age • age structure, life expectancy, morbidity and mortality • ageing theories • physiological changes in old age • nutritional requirements and supply in old age • practical implementation of theoretical concepts in an adequate diet for ageing and old persons				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	90			
	Seminar	30				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100%)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit (Seminar in groups of size 30)				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/neuhaeuser-berthold				

BP 004 - Functional Food						**5. Sem.;**	**6 CP**
German Module Title		Funktionelle Lebensmittel					
Module Coordinator		Prof. Dr. Clemens Kunz					
Prerequisites for Participation		Human Nutrition (BK 13)					
Learning Outcomes		The students • have basic knowledge of the nutritional value of food, • understand the relevance of functional food from the point of view of the customer, science and industry.					
Module Content		• Specific nutritional aspects of selected foods • distinction of conventional, functional, dietetic and new kinds of food, nutritional supplements and medicines • evaluation of the relevance of new foods (and food ingredients) for disease prevention • legal assessment of health claims etc. • critical evaluation of developments in the food industry					
Forms of Instruction		Lecture (100%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	60	90				
	Seminar						
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/fbr09/nutrition					

BP 005 - Applied Dietetics	**5./ 6. Sem.; 5./6. Sem.;**	**6 CP**

German Module Title		Angewandte Diätetik				
Module Coordinator		AkOR, Dr. Sabine Schulz				
Prerequisites for Participation		Human Nutrition (BK 13)				
Learning Outcomes		The students will • gain a basic understanding of the pathophysiology of important metabolic diseases and the basic knowledge of dietary therapy, • be able to transfer dietetic concepts into practice and to work up dietary recommendations in a patient-appropriate manner				
Module Content		• diet and primary prevention • basics of the dietetics of selected diseases, e.g. obesity, hyperuricemia, dyslipoproteinemia, hypertension, diabetes, liver and kidney diseases, pancreatic insufficiency, chronic inflammatory bowel diseases, celiac disease, food allergy and intolerance, rheumatoid arthritis • application and evaluation of nutritional assessment • transferring of dietary prescriptions into practice (preparing meals, calculating meal plans suitable for the diet) • applying of food composition database for nutrient calculation • evaluation of alternative dietary concepts				
Forms of Instruction		Lecture (50%), Practical training (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	50			
	Seminar					
	Practical Training/ Laboratory	30				
	Exercises					
	Excursion					
	Homework					
		60	50	40	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination (required: exercises successfully finished, accepted seminar paper and nutritional anamnesis or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe und SuSe		Duration 1 Semester		
Intake capacity		64				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/schulz				

BP 006 - Cultivated Plants in Organic Farming	**2./4./6. Sem.;**	**6 CP**

German Module Title		Nutzpflanzen im organischen Landbau				
Module Coordinator		Prof. Dr. Günter Leithold				
Prerequisites for Participation		None (recommended: attandance of BP 034 in the previous winter semester)				
Learning Outcomes		The students • gain an insight into organic agricultural production as well as into the methodology of converting to organic production, • are familiar with the particulars of the main organic farming cultures under ecological farming conditions, • can analyse and assess crop rotations and optimise them in accordance with the relevant production goals, • learn the autonomous preparation and presentation of scientific topics as well as the skills required to work within a team.				
Module Content		• principles, development and goals of organic farming • methods for converting to organic farming • principles of planning and structuring organic crop rotation • specifics of the organic cultivation practices for the most important crop types in organic farming (planting, harvesting, storing): grains, oil-bearing fruits, fodder and grain legumes, root crops, mixed crops and catch crops • the particulars of the cultivation practices will largely be compiled and presented autonomously by the students				
Forms of Instruction		Lecture (60%), Seminar (20%), Practical Training (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	36	60			
	Seminar	12				
	Practical Training/ Laboratory	12				
	Exercises					
	Excursion					
	Homework					
		60	60	40	20	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, performance during the module (presentation/discussion/handout) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (75 %), Seminar (25 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/pflbz2/olb				

BP 007 - Principles and Practices of Counseling and Consulting					**2.-5. Sem.;**	**6 CP**
German Module Title		Grundlagen der Beratung und Gesprächsführung				
Module Coordinator		Prof. Dr. Jasmin Godemann				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain professional skills: fundamental theories, concepts, methods and instruments • gain methodological and analytical competences: the ability to reflect on practical experiences based on theories and methods • acquire generic competences: interdisciplinary approach, ability to understand complex problems				
Module Content		• different disciplinary perspective on counselling and consulting (psychology, pedagogy, sociology, philosophy) • basic theoretical and conceptual knowledge of counselling and consulting • concepts of counselling (C. Rogers, R. Cohn) • distinguishing of different methods for counselling and consultation (e.g. individual counselling, group counselling, counselling of organizations, counselling in politics • functions and work fields of counselling and consulting (education, information, empowerment) • methods of the consulting practice • challenges and trends in consulting • target group specific counselling • basics and methods of quality assurance and success monitoring in consulting • counselling and consultancy on an international level • the counselling profession				
Forms of Instruction		Lecture (50%), Seminar (30%), Exercises (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	40			
	Seminar	18	20			
	Practical Training/ Laboratory					
	Exercises	12				
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe und SuSe		Duration 1 Semester		
Intake capacity		45				
Language		German				
Website		www.uni-giessen.de/fbz/fb09/institute/wdh/kommunikation				

BP 008 - International Nutrition Security I						**5. Sem.;**	**6 CP**
German Module Title		Internationale Ernährungssicherung I					
Module Coordinator		Prof. Dr. Gunter P. Eckert					
Prerequisites for Participation		Human Nutrition (BK 13)					
Learning Outcomes		The students • have a coherent knowledge of occurrence, diagnostics and management of protein-energy-malnutrition and micronutrient malnutrition, • are familiar with anthropometric methods for diagnosing malnutrition, • have knowledge of the requirements for food security, • can evaluate food aid.					
Module Content		• diagnostics and management of protein-energy-malnutrition and micronutrient malnutrition • UNICEF model of food security • guidelines and problems of food aid • anthropometric measurement methods • methods of measuring nutrition in countries with low income • bi- and multilateral development cooperation					
Forms of Instruction		Lecture (75%), Seminar (25%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	45	30				
	Seminar	15	30				
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written or oral examination or b) repetition / revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/krawinkel					

BP 009 - Experimental Hydrology						**3./4. Sem.;**	**6 CP**
German Module Title		Hydrologisches Praktikum					
Module Coordinator		Prof. Dr. Lutz Breuer					
Prerequisites for Participation		None (recommended: Basics in Landscape Hydrology BK 37, Mathematics and Statistics BK 05; knowledge of a spreadsheet analysis program)					
Learning Outcomes		The students • know the most important hydrometric and soil hydrological measurement methods, • can independently plan and carry out field experiments to investigate lateral and vertical water fluxes, • assess the hydrological characteristics of soils due to soil hydrological information, • can derive hydrological processes based on hydrometric measurements.					
Module Content		• Fundamentals of soil hydrology and hydrometry • Measurement method: soil moisture (gravimetric, TDR), water tension (tensiometer), infiltration and hydraulic conductivity (double ring infiltrometer, constant head permeameter), discharge (measuring weirs, tracers, current meter, ADCP), surface runoff, groundwater flow (level, slug test), hydrograph separation • statistical data analysis • interpretation of results and writing of a project report					
Forms of Instruction		Lecture (33%), Exercises (67%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	20	60				
	Seminar						
	Practical Training/ Laboratory						
	Exercises	40					
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) project work (written composition) and presentation or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Project Work (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Revision of the project work (within four weeks) or b) repetition / revision of the examination as defined in b)					
Frequency		SuSe, Block Module			Duration 1 Semester		
Intake capacity		30					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/ilr/wasser					

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BP 010 - Food Chemistry Laboratory					**6. Sem.;**	**6 CP**
German Module Title		Lebensmittelchemisches Praktikum				
Module Coordinator		Prof. Dr. Gertrud Morlock				
Prerequisites for Participation		None (recommended: attendance of module BP 011)				
Learning Outcomes		The students • are familiar with the theoretical fundamentals of all important methods used in food chemistry and have applied the important methods used in food chemistry in at least one practical example, • can evaluate examined substances with regard to legal regulations and determine their merchantability. • are familiar with the structures of German and European food law, • have knowledge of the certification and prohibition standards for foods and additives, • have basic knowledge of food production and processing				
Module Content		• Analysis of foodstuffs (beverage, greases, flours, sweets, snack-products etc.) • Food additive regulations using the example of food dyes and their analysis • Titrimetry and redox reactions • Application of chromatographic methods like TLC/HPTLC, HPLC, and GC • Application of sample preparation techniques like soxhlet extraction, solid-phase extraction, solid-liquid extraction, • Methods of § 64 LFBG (German food and feed code), food regulatory evaluation of the merchantability of analyzed food				
Forms of Instruction		Seminar (40%), Laboratory (60%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar	24	40			
	Practical Training/ Laboratory	36	40			
	Exercises					
	Excursion					
	Homework					
		60	80	20	20	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, reports on 6 laboratory units, seminar contribution or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (54 %), Laboratory reports (36 %), Seminar Contribution (10 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or b) repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		36				
Language		German				
Website		http://www.uni-giessen.de/cms/food				

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BP 011 - Food Toxicology and Law					**5. Sem.;**	**6 CP**
German Module Title		Lebensmittelchemie, -analytik und -recht				
Module Coordinator		Prof. Dr. Gertrud Morlock				
Prerequisites for Participation		None				
Learning Outcomes		The students • are familiar with terms of food chemistry and analysis like analyte, matrix, additives, contaminant etc. • are familiar with sample preparation and chromatographic techniques (gas chromatography, high performance liquid chromatography and high-performance thin-layer chromatography) and possess basic knowledge about their application • have basic skills on sample analysis and can rudimentarily evaluate the significance of results (verification, method validation) • have basic knowledge about the European and German food law and the procedure of food protection in Germany and EU.				
Module Content		• Maillard reaction as an example of chemical reactions in food processing and storage, other main and marker compounds in food • Important separation techniques of food analysis including sample preparation and assessment of results • Regulations and Directives of the EU concerning food law (e. g. Regulation (EC) No 178/2002 and regulations on food additives) • The German food and feed code (Lebensmittel- und Futtermittelgesetzbuch, LFGB) and the German regulation on food labeling (Lebensmittel-Informationsverordnung, LMIV).				
Forms of Instruction		Lecture (83%), Laboratory (17%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	50	90			
	Seminar					
	Practical Training/ Laboratory	10				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or b) repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		150				
Language		German				
Website		http://www.uni-giessen.de/cms/food				

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BP 013 - Probiotic Foods					**1. Sem.;**	**6 CP**
German Module Title		Probiotische Lebensmittel				
Module Coordinator		Prof. Dr. Clemens Kunz				
Prerequisites for Participation		None				
Learning Outcomes		The students • acquire knowledge on probiotic microorganism • gain knowledge on the production of probiotic foodstuffs • get insight into the quality control of probiotics • get an insight into the marketing of probiotic foodstuffs				
Module Content		• diversity and distribution of microorganisms • historic and cultural classification of probiotics • metabolism of probiotic bacteria • detection principles of microbiological methods • quality assurance of foodstuffs • demonstration of diverse microbiological techniques and various microorganisms • marketing and law of foodstuffs • insight into processes in the food industry				
Forms of Instruction		Lecture (50%), Seminar (30%), Excursion (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	60			
	Seminar	18				
	Practical Training/ Laboratory					
	Exercises					
	Excursion	12				
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or b) repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/nutrition				

BP 015 - Economics of Food Service Management					**2./4. Sem.;**	**6 CP**
German Module Title		Einführung in das Verpflegungsmanagement				
Module Coordinator		Prof. Dr. Dietmar Bräunig				
Prerequisites for Participation		None				
Learning Outcomes		The students • have an overview of catering management, • have an overview of the methodical and theoretical fundamentals of managing food service institutions, • have knowledge of the performance-related and financial functions and characteristics of food service institutions, • can apply the methodical, theoretical and functional knowledge to food service institutions • can deduce and solve management problems of food service institutions analytically				
Module Content		• Aims and systems of food service institutions • Performance-related and financial functions of food service institutions • Quality management and controlling of food service institutions • Optimisation of operational decisions using the example of food service institutions • Economic parameters and potentials of catering management				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or b) repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/wdh/mpv/				

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BP 017 - Legal Aspects of Safety and Risk Assessment of Food					**3.-6. Sem.;**	**6 CP**
German Module Title		Rechtliche Aspekte zur Sicherheit und Risikobewertung von Lebensmitteln				
Module Coordinator		Prof. Dr. Monika Neuhäuser-Berthold				
Prerequisites for Participation		None				
Learning Outcomes		The students • have knowledge of the statutory basises on the European and German level as well as the structure of associated institutions • gain understanding of how security relevant decisions are taken on the European level and which procedures are applied for risk assessment • obtain an overview on which foods require an admission procedure • can autonomously work on issues and do the necessary research				
Module Content		• food laws (declaration, enrichment, dietary food, novel food) and associated institutions and their fields of activity • toxicological evaluation and exposure assessment • addition of substances for particular uses • examples of application in foods • application procedures on the European and Germen level • discussion of current topics				
Forms of Instruction		Seminar (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar	60	60			
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) presentation and written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Presentation (50 %), Written examination (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or b) repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30 pro Seminar				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/neuhaeuser-berthold				

BP 018 - Inequality and Poverty Research					**4. Sem.;**	**6 CP**
German Module Title	Ungleichheits- und Armutsforschung					
Module Coordinator	Prof. Dr. Uta Meier-Gräwe					
Prerequisites for Participation	None					
Learning Outcomes	The students • are familiar with the theoretical fundamentals of inequality and poverty research, • can apply different approaches and indicators for detecting social inequality and determine their distribution, • can determine a nourishment shortage situation for different demographic groups and types of households.					
Module Content	• theoretical concepts and methods of inequality and poverty research • practical poverty and social media reporting on a national and local level • evidence of economic and social burdens in different social circumstances (demography, financial situation, living situation, employment situation, education, health) • analysis of the social environment in theory and practice • strategies and major players in the field of poverty reduction and prevention					
Forms of Instruction	Seminar (75%), Practical training (25%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar	45	40				
Practical Training/ Laboratory	15	20				
Exercises						
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) presentation/assignment and written examination. Both parts of the examination must be passed min. with the mark “ausreichend” (equivalent: D) or b) examination defined by the lecturer (see Special Regulation § 8)					
Components of final grade	Presentation/Assignment (50 %), Written examination (50 %)					
Form of module component retake examination	Repetition / revision of the respective part of the examination					
Form of module retake examination	Respective part of the examination or b) repetition / revision of the examination as defined in b)					
Frequency	SuSe		Duration 1 Semester			
Intake capacity	60					
Language	German					
Website	http://wi.uni-giessen.de/wps/fb09/home/meier/					

BP 019 - Everyday Management of Private Households						**3. Sem.;**	**6 CP**
German Module Title		Alltagsmanagement privater Haushalte					
Module Coordinator		Prof. Dr. Dietmar Bräunig					
Prerequisites for Participation		None					
Learning Outcomes		The students • are familiar with the theoretical fundamentals of the management of private households, • understand the internal structure of everyday life and its correlation with the environment from a microeconomic perspective, • have knowledge of the methods of household analysis and the tools for gathering and analysing data of private households, • can evaluate situations of private households with the help of indicators for different types of households and families.					
Module Content		• Persons in a household and the development of family structures and their importance for the situation of households • Housing conditions and living environments (spatial and technical aspects) • time management under consideration of the division of labour in the household and the combining of family, career and care • financial management from the perspective of budgeting, precaution and asset protection as well as debts management • the relevance of the household conditions for life and for the organisation of daily routines					
Forms of Instruction		Lecture (75%), Exercises (25%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	45	45				
	Seminar						
	Practical Training/ Laboratory						
	Exercises	15	15				
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)					
Frequency		WiSe			Duration 1 Semester		
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/wdh/mpv/					

BP 020 - Consumption Patterns of Private Households					**4. Sem.;**	**6 CP**
German Module Title	Konsummuster privater Lebensformen					
Module Coordinator	Prof. Dr. Uta Meier-Gräwe					
Prerequisites for Participation	None					
Learning Outcomes	The students • understand the different explanatory models concerning consumer behaviour in economics, sociology, psychology and ecology, • have fundamental knowledge of private ways of life (households/families/different target groups) and their demographic, economic and social characteristics, • can analyse empirical studies regarding consumer behaviour in respect of the methodology of the data sources and validity concerning consumption patterns.					
Module Content	• basics and principles of explanatory models concerning consumer behaviour: socio-economic behaviour research, lifestyle research, ecologically sustainable behaviour research • analysis and interpretation of data: official and unofficial statistics, empirical studies regarding consumer behaviour and private ways of life, structure and creation of tables • political and legal framework conditions of consumer behaviour: consumer policy in Germany and the EU					
Forms of Instruction	Seminar (75%), Practical Training (25%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar	45	40				
Practical Training/ Laboratory	15	20				
Exercises						
Excursion						
Homework						
	60	60	40	20	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) presentation/assignment and written examination. Both parts of the examination must be passed min. with the mark “ausreichend” (equivalent: D) or b) examination defined by the lecturer (see Special Regulation § 8)					
Components of final grade	Presentation / Assignment (50 %), Written examination (50 %)					
Form of module component retake examination	Repetition / revision of the respective part of the examination					
Form of module retake examination	Respective part of the examination or b) repetition / revision of the examination as defined in b)					
Frequency	SuSe		Duration 1 Semester			
Intake capacity	60					
Language	German					
Website	http://wi.uni-giessen.de/wps/fb09/home/meier/					

BP 025 - Marketing Management in the Farm and Food Industry					**5. Sem.;**	**6 CP**
German Module Title		Marketing in der Agrar- und Ernährungswirtschaft				
Module Coordinator		Prof. Dr. Rainer Kühl				
Prerequisites for Participation		None				
Learning Outcomes		The students • have knowledge of marketing tools, • are familiar with the conceptual basics and further development of marketing management, • can support a suitable behavioural scientific and economical methodical foundation of decision making in marketing, • have the ability to and are motivated to prepare and implement concrete marketing decisions.				
Module Content		• conceptual fundamentals of farm and food marketing • behavioural and information fundamentals of customers and consumer behaviour • strategic marketing planning, (decisions regarding products and programmes, prices, distribution (logistics) and decisions in advertising policy) • competitive advantages by individual marketing concepts for businesses • marketing decisions of non-profit organisations, social and eco-marketing, agricultural marketing, service marketing • marketing research (empirical data collection and data analysis) • multivariate analysis methods and quantitative decision-making processes				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	80			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	80	20	20	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ibae/foodeconomics				

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BP 026 - The Agricultural and Food Economy of the European Union	**6. Sem.;**	**6 CP**

German Module Title		Agrar- und Ernährungswirtschaft in der EU				
Module Coordinator		Prof. Dr. Roland Herrmann				
Prerequisites for Participation		None: (recommended: Policy and Markets in the Agricultural and Food Economy (BK 14))				
Learning Outcomes		The students • have developed an understanding of the development of the animal and vegetable agricultural markets in the EU; • have an overview of the effect of different instruments of the European farm policy and altered consumer preferences on the development of the agricultural markets; • deepen their knowledge of the development of the food industry in the EU and the deDateants of competitiveness; • can demonstrate how governmental framework conditions influence the markets of processed foods and their effects.				
Module Content		European agricultural markets: • development of the European agricultural markets under the influence of politics and altered consumer preferences; • economic analysis of the meat industry; • economic analyses of the milk market in the EU; • health consciousness and markets of animal products; • animal husbandry, global food situation and environment; • the grain market in the EU; • European sugar industry; • wine market and wine policy; • economics of the European fruit and vegetable market. Food industry: • structure, development and deDateants of food demand, of food trade and of the food industry; • competitiveness within the food industry; • price formation, market structure and competition in the food industry; • innovation and product differentiation; • competition and consumer protection policy and the markets of the food industry; • economics of generic food advertising; case studies.				
Forms of Instruction		Lecture (80%), Practical Training (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	48	90			
	Seminar					
	Practical Training/ Laboratory	12				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition / revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/prof-mae				

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BP 027 - Process Engineering and Thermodynamics	**2./4./6. Sem.;**	**6 CP**

German Module Title		Grundlagen der Prozesstechnik und Thermodynamik				
Module Coordinator		Dr. Daniela Thomae				
Prerequisites for Participation		None				
Learning Outcomes		The students • have knowledge of the fundamentals of thermodynamics and the corresponding values and units in the *Système international d´unités* (SI System), • have basic knowledge of energy and material transmission • understand the basics of human nutrition from a thermodynamic point of view (energy turnover, generation of heat and labour, performance), • can apply basic system theory approaches to examples from the area of food technology and power engineering, • can assess processes using system balances.				
Module Content		• thermodynamic values and units in the statutory SI System • modelling, system theory, accounting equations • fundamentals of thermodynamics (fundamental theorems, energy, exergy, anergy, internal energy, volumetric change, enthalpy, entropy) • thermodynamics of human nutrition in SI units (energy turnover, body mass, BMI, heat and labour, quiescent labour, quiescent and sports performance) • energy transmission (across different systems through heat and labour, heat flow and performance) and • fundamentals of quality management according to ISO 9000 ff., of hygienic management according to HACCP and of eco-management according to ISO 14000 ff. from a technical point of view				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written or oral examination (depending on the number of students), Seminar paper and presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written or oral examination (50 %), Seminar paper and presentation (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination (depending on the number of students) or b) examination defined by the lecturer (see Special Regulation § 8)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/pt/				

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BP 028 - Grassland Science					**4. Sem.;**	**6 CP**
German Module Title		Grünlandlehre				
Module Coordinator		Prof. Dr. Günter Leithold				
Prerequisites for Participation		None (recommended: attendance of BK 21 in the previous winter semester)				
Learning Outcomes		The students • have knowledge and skills in grassland management and can analyse production ecology, • can classify foliage plants.				
Module Content		• production ecology: biomass production, growth patterns, frequency and date of use • meadows and pastures: ecology of grazing and cutting, vegetation patterns, grassland management • new plants, species, varieties • location factors, location factors, pests • forage quality; • dual use; grassland fallows and environment protection; • renewable energy from grassland • fertilisation and vegetation: basics, nutrients, fertiliser • sustainable management: soils and swards • botanic classification practices: addressing grasses and herbs with and without keys				
Forms of Instruction		Lecture (50%), Exercises (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	30				
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, oral examinations during the semester or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (80 %), oral examiation (20 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/pflbz2/olb				

BP 029 - Forage Crop Systems					**5. Sem.;**	**6 CP**
German Module Title		Feldfutterbau und Gärsubstrate				
Module Coordinator		Prof. Dr. Bernd Honermeier				
Prerequisites for Participation		None (recommended: knowledge of crop production and animal nutrition)				
Learning Outcomes		The students • gain knowledge and skills in producing forage crop and conserves as well as evaluating their quality, • have knowledge of vegetable substrates for biogas production, • are familiar with the most important crops and their cultivation properties, • gain an insight into field and laboratory techniques of quality analysis, • can apply and interpret analysis methods and present the results in a report.				
Module Content		• field forage production: fundamentals and cropping systems of field forage production • main perennial and annual fruits • catch crops: preceding/succeeding crop combinations; cultivation methods of different species • cover crops: Winter cover crops, summer cover crops • under sown crops, catch crops • forage conservation: forage production and preparation • biological basics of forage conservation, suitability for conservation and evaluation of conserves, methods of forage evaluation • quality analysis: laboratory techniques: chemical, physical, enzymatic • sensory evaluation; fermentability; field methods: value and grading factors				
Forms of Instruction		Lecture (67%), Seminar (17%), Exercises (17%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	90			
	Seminar	10				
	Practical Training/ Laboratory					
	Exercises	10				
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) Written examination, Seminar presentation or seminar paper or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (80 %), Presentation or seminar paper (20 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/pbau/				

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BP 030 - Arable Farming Systems	**3. Sem.; 3./5. Sem.;**	**6 CP**

German Module Title		Ackerbausysteme: Verfahren des Ackerbaus bei unterschiedlicher Bewirtschaftungsintensität				
Module Coordinator		Prof. Dr. Günter Leithold				
Prerequisites for Participation		None (recommended: attendance of BK 21 in the previous or in the same semester)				
Learning Outcomes		The students • understand arable farming systems, • have knowledge of the principles and methods of different agricultural systems (systems of land use), in particular regarding tillage, crop rotations, and weed control, • are familiar with the specific conditions in conventional, integrated and organic farming and their implications for arable farmings				
Module Content		• principles and implementation of arable farming • systematics and history of agricultural systems • crop rotation (principles, limits of crop concentrations, yield protecting measures, crop rotation in agricultural systems with different cultivation intensities) • tillage (agricultural fundamentals, tillage practices, caracteristics of conventional or organic tillage practices as well as their effects on soil, plants and the environment) • herbology (relevance and classification of field weeds, effects of tillage on weeds) and weed regulation in crop stands with indirect or direct measures				
Forms of Instruction		Lecture (80%), Practical Training (15%), Excursion (5%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	48	70			
	Seminar					
	Practical Training/ Laboratory	9				
	Exercises					
	Excursion	3				
	Homework					
		60	70	20	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or written examination and presentation paper or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %) or written examination (75 %) and presentation (25 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or b) examination defined by the lecturer (see Special Regulation § 8)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/pflbz2/olb				

BP 031 - Ecology of Agronomy						**6. Sem.;**	**6 CP**
German Module Title		Produktionsökologie					
Module Coordinator		Prof. Dr. Bernd Honermeier					
Prerequisites for Participation		None (recommended: knowledge of crop production or agriculture and environment)					
Learning Outcomes		The students • understand the interrelationship between the conditions and methods of cultivation of agricultural crops and their effects on the environment, • can assess and optimise cultivation schemes for the purpose of environmentally compatible cultivation methods.					
Module Content		• crop cultivation and its impact on the environment • influence of land use on groundwater recharge and quality as well as on nutrient and energy balances • heavy metal absorption of crops • residues of pesticides in the ground and in plants • danger of soil erosion • formation of noxious gases • measures to ensure environmentally compliant cultivation methods, interaction between fruit rotation, habitat and agronomic measures • effects, principles and methods of the use of fertiliser • assessment of the cultivation of genetically modified cultivated plants					
Forms of Instruction		Lecture (67%), Seminar (20%), Practical Training (13%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	40	50				
	Seminar	12	30				
	Practical Training/ Laboratory	8	10				
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) oral examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Oral examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Oral examination or b) examination defined by the lecturer (see Special Regulation § 8)					
Frequency		SuSe		Duration 1 Semester			
Intake capacity		40					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/pbau/					

BP 033 - Plant Breeding					**5. Sem.;**	**6 CP**
German Module Title		Pflanzenzüchtung				
Module Coordinator		Prof. Dr. Rod Snowdon				
Prerequisites for Participation		Genetics and Plant Breeding (BK 47)				
Learning Outcomes		The students • have knowledge of the fundamentals of botanic, specifically in relation to breeding (evolution, classification, development, reproduction, cell and tissue culture, etc.), • have knowledge of the fundamentals of genetics, specifically in relation to breeding (quantitative and Mendelian genetics, heritability, molecular genetics), • are familiar with the general and particular breeding aims of important agrarian crops, • know the essential classical methods of plant breeding, • know the breeding-methodical possibilities of optimising the selection yield, • have knowledge of biotechnological and molecular biological methods in plant breeding, • have experience using biotechnological and molecular procedures in plant breeding.				
Module Content		• biological fundamentals of plant breeding: cell division, propagation, reproduction, meiosis, formation of gametes, fertilisation, development, evolution, classification, crop science (types of grains, oil and protein crops, fibre plants, forage plants, tuber and root crops) • general and particular breeding aims (characteristics, heritability, successful selection) • genetic fundamentals: Mendelian genetics, phenotype and genotype, environment and heredity, heritability and successful selection, variation • breeding methods: induction and use of genetic variation, selection methods, cell and tissue culture techniques (biotechnology), molecular methods (molecular markers, gene mapping, marker-based selection, genomic selection)				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Oral examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition / revision of the examination defined in b) by the lecturer (see Special Regulation § 8)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/ipz/				

BP 034 - Basic Principles of Organic Farming					**3. Sem.;**	**6 CP**
German Module Title		Grundlagen des organischen Landbaus				
Module Coordinator		Prof. Dr. Günter Leithold				
Prerequisites for Participation		None (recommended: attendance of BK 21 in the previous or the same semester)				
Learning Outcomes		The students • understand the fundamentals and principles of organic farming, • know about the specific basic conditions and characteristics of organic crop production and plant protection • can assess sustainability, environmental impacts and product quality in organic farming • gain an insight into the support of eco-cultivation, the work of farmers' associations and into the EC bio legislation.				
Module Content		• history, current situation and future aspects of organic farming • soil fertility in organic farming (biological activity, soil organic matter and nutrient supply, soil structure) • production methods (crop rotation, tillage, intercropping, organic fertilisers) • biologic plant protection and weed regulation • laws and guidelines				
Forms of Instruction		Vorlesung (80%), Practical Training (15%), Excursion (5%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	48	80			
	Seminar					
	Practical Training/ Laboratory	9				
	Exercises					
	Excursion	3				
	Homework					
		60	80	20	20	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or written examination and presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %) or written examination (75 %) and presentation (25 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition /revision of the examination defined in b) by the lecturer (see Special Regulation § 8)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/pflbz2/olb				

BP 036 - Soil Fertility					**4. Sem.;**	**6 CP**
German Module Title		Bodenfruchtbarkeit				
Module Coordinator		Prof. Dr. Sven Schubert				
Prerequisites for Participation		Successful completion of Plant Nutrition (BK 24)				
Learning Outcomes		The students • have knowledge of the essential factors of soil fertility, • understand the relevance of different soil fertility indicators for surface productivity considering the sustainability and environmental compatibility, • have the ability to and are motivated to conceive approaches for optimizing soil fertility at different cultivation intensities, • have skills in using different methods for achieving a humus and nutrient balance.				
Module Content		• terms of soil fertility: possibilities and limitations from the point of view of agronomy crop science, economics and plant nutrition • analysis options for evaluating and optimising soil fertility characteristics which can change in the short, medium or long term • impact of crop rotation, cultivation and fertilizer application on soil fertility parameters • use of farm and sero fertilizers				
Forms of Instruction		Lecture (60%), Seminar (20%), Practical Training (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	36	60			
	Seminar	12				
	Practical Training/ Laboratory	12				
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, presentation/assignment or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (75 %), Presentation/Assignment(25 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		60				
Language		German				
Website		http://www.uni-giessen.de/plant-nutrition/				

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BP 037 - Agricultural Chemistry					**5. Sem.;**	**6 CP**
German Module Title		Agrikulturchemie				
Module Coordinator		Prof. Dr. Sven Schubert				
Prerequisites for Participation		Plant Nutrition (BK 24)				
Learning Outcomes		The students • are experienced in working in a chemical laboratory, • have knowledge of quantitative analytical methods for identifying agronomically relevant compounds in liquids, plants and fertilizers.				
Module Content		• chemical units and stoichiometric calculating • sample preparation • titrimetry • enzymatic analysis • potentiometry • chromatographic procedures • photometry • flame photometry • atomic absorption spectroscopy				
Forms of Instruction		Laboratory (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar					
	Practical Training/ Laboratory	60	60			
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination, reports on 12 laboratory units or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Oral examination (50 %), Laboratory reports (50 %). Module completion requires a successfully passed oral exam.				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/plant-nutrition/				

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BP 038 - Agricultural Ecology and Integrated Crop Protection					**4. Sem.;**	**6 CP**
German Module Title	Agrarökologie und integrierter Pflanzenschutz					
Module Coordinator	Prof. Dr. Andreas Vilcinskas					
Prerequisites for Participation	None					
Learning Outcomes	The students • have fundamental knowledge of ecology and can apply them to different eco-systems or questions • have knowledge of the large spectrum of interactions in the agricultural landscape between herbivores, saprophages and carnivores as well as plants, landscape structure and soil, • have knowledge of important naturally occurring antagonists of pests and know how to use, foster and protect them, • have knowledge of important individual components of integrated plant protection, can assess them and merge the individual components together in order to create holistic overall concepts. • can autonomously do the necessary literature research for a given topic, summarise and present the contents • are able to set up a WiKi page about the contents of the course (presented in StudIP) autonomously and as a group					
Module Content	• Fundamentals of ecology • procedures for preserving and maximising the potential of natural predators in agricultural ecosystems (habitat management) • strategies of integrated plant protection • agricultural interconnections, i.e. interactions between animals, plants, landscape structure and soil • composition and relevance of the natural antagonist potential in the agrarian landscape					
Forms of Instruction	Lecture (46%), Seminar (38%), Excursion (15%)					
Workload	180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	24	60			
	Seminar	20	30			
	Practical Training/ Laboratory					
	Exercises					
	Excursion	8				
	Homework					
		52	90	8	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, presentation (30 min.) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (50 %), presentation (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe			Duration 1 Semester		
Intake capacity	30					
Language	German					
Website	http://www.uni-giessen.de/ipaz					

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BP 040 - Project Study in Crop Production					**6. Sem.;**	**6 CP**
German Module Title		Projektstudium Pflanzenproduktion				
Module Coordinator		Prof. Dr. Bernd Honermeier				
Prerequisites for Participation		None (recommended:knowledge of crop production (BK 21))				
Learning Outcomes		The students • have knowledge of the connections and correlations between location, choice of seeds and agronomic measures (including fertilisation and application of pesticides), • can evaluate crop stocks and control and use plant cultivation measures				
Module Content		• features of different locations • features and characteristics of crop species and sorts (or sort types) with regard to breeding, cultivation and quality • principles of stock establishment and control regarding grain, rapeseed, potatoes, sugar beets and forage crops • recognition and assessment of accompanying field flora in different developmental stages • evaluation of pest regulation methods • pest diagnosis and supervision in a field environment • principles of organic and mineral fertilisation, methods of diagnosing N-alimentation in a field environment				
Forms of Instruction		Seminar (40%), Practical Training (60%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar	24	60			
	Practical Training/ Laboratory	36	30			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination, herbarium or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Oral examination (80 %), Herbarium (20 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/pbau/				

BP 041 - Biostatistics						**2. Sem.;**	**6 CP**
German Module Title		Biostatistik					
Module Coordinator		Prof. Dr. Matthias Frisch					
Prerequisites for Participation		Mathematics and Statistics (BK 05)					
Learning Outcomes		The students • can calculate measures of location scales and dispersion measures with experimental data • can process experimental data graphically • can carry out fundamental statistical analyses and interpret their results					
Module Content		• Processing of experimental data graphically • Fundamental parametric and non-parametric test procedures • introduction into the variance analysis • introduction into the multiple linear regression • introduction into the variance component estimation • introduction into the analysis of genome sequences and of molecular genetic data • application of appropriate statistic programmes					
Forms of Instruction		Lecture (50%), Practical Training (50%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	30				
	Seminar						
	Practical Training/ Laboratory	30	30				
	Exercises						
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination, 4 exercises or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (70 %), Exercises (30 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)					
Frequency		SuSe		Duration 1 Semester			
Intake capacity		No limit (PC training in parallel courses with 20 participants)					
Language		German					
Website		http://www.uni-giessen.de/population-genetics					

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BP 042 - Horticulture and Viticulture					**4. Sem.;**	**6 CP**
German Module Title		Garten- und Weinbau				
Module Coordinator		Prof. Dr. Bernd Honermeier				
Prerequisites for Participation		None (recommended: knowledge of crop production (BK 21) and/or plant-based food)				
Learning Outcomes		The students • have fundamental knowledge of horticulture and viticulture, • are familiar with the connections and particularities of cultivating spice plants, vegetables, fruits and vine, • have knowledge of the specific cultivation methods and product characteristics of vegetables, fruits and wine				
Module Content		• overview of horticulture and viticulture in Germany and worldwide • important vegetable crops (leaf vegetables, fruit vegetables, root vegetables) and spice plants • cultivation and quality of vegetables (field vegetables, protected vegetables) • specific aspects of growth and cultivation of fruits (fruit tree rootstocks, pruning, pest control) • fundamentals of the cultivation of grape vines • introduction into the processing of grapes to wine • examples for species identification, specific aspects of the breeding and cultivation of vegetables, fruits and grapevines • quality standards of the products and method of influencing the quality during cultivation of spices, vegetables and fruits				
Forms of Instruction		Lecture (60%), Practical Training (40%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	36	90			
	Seminar					
	Practical Training/ Laboratory	24				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		70				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/pbau/				

BP 043 - Research Project in Animal Husbandry					**4. Sem.;**	**6 CP**
German Module Title		Projektstudium Tierzucht				
Module Coordinator		Prof. Dr. Sven König				
Prerequisites for Participation		Animal Breeding (BK 46)				
Learning Outcomes		The students • have knowledge and skills for deDateing the identity, race, age and size of an animal, • can apply methods for conformation assessment, • are familiar with conducting and interpreting performance tests and with deDateing the benefit and breed values, • have the ability to make an informed decision regarding the use of an animal				
Module Content		• fundamentals of conformation • deDateation of the identity, the race or line, the age and size of an animal • adspective and palpative identification and description of conformation characteristics • investigation and written documentation of findings in organs, tissues and the entire body • application of technical methods for conformation assessment • interpretation of performance tests • deDateation benefit and breed values • decision-making regarding the use of an animal				
Forms of Instruction		Lecture (33%), Practical Training (33%), Excursion (33%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	30			
	Seminar					
	Practical Training/ Laboratory	30				
	Exercises					
	Excursion	30				
	Homework					
		90	30	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination, practical examination with animals or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Project work (50 %), practical examination with animals (conformation assessment) (25 %), oral examination (25 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_erhardt/index.htm				

BP 044 - Quality of Animal-Derived Food Products					**5. Sem.;**	**6 CP**
German Module Title	Qualität vom Tier stammender Lebensmittel					
Module Coordinator	Prof. Dr. Sven König					
Prerequisites for Participation	Animal Breeding (BK 46)					
Learning Outcomes	The students • are familiar with the chemical-physical, biochemical and hygienic fundamentals of product quality, • have knowledge and skills in applying methods for deDateing the product quality, • can analyse the factors which define the product quality and evaluate their importance for production, processing, consumption and marketing.					
Module Content	• relevance of animal-derived food products • chemical, physical, biochemical and nutritional basics of product quality • factors of chemical-physical, nutritional, hygienic-toxicological, technologic and sensory product quality • methods of deDateing product properties • animal health, genetic, ecologic, biologic, feed-related, biotic and abiotic factors which influence product quality • consumer and processor demands on product quality • breeding and production, product quality					
Forms of Instruction	Lecture (75%), Practical Training (25%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	45	60				
Seminar						
Practical Training/ Laboratory	15					
Exercises						
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination, project work or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (80 %), Project work (20 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency	WiSe		Duration 1 Semester			
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/fbr09/tierzucht/ag_erhardt/index.htm					

BP 045 - Biological and Genetic Principles of Animal Breeding					**2. Sem.;**	**6 CP**
German Module Title		Biologische Grundlagen der Tierzüchtung				
Module Coordinator		Prof. Dr. Gesine Lühken				
Prerequisites for Participation		None				
Learning Outcomes		The students • have profound anatomic and physiologic knowledge of important organ systems of livestock species and are able to evaluate the impacts of livestock farming activities.				
Module Content		• anatomy: epithelial tissue, fascia and stroma, skeletal system and joints; skeletal muscle system; cardiovascular system; respiratory organs; digestive organs; urinary organs and genitals; nervous system; endocrine organs, skin and skin derivates. • physiology: cells, nerves and muscles; blood and immune system; heart and circulation; digestion; hormones and lactation.				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_erhardt/index.htm				

BP 046 - Fundamentals in Molecular Biology and Reproduction Techniques for Animal Breeding	**3. Sem.;**	**6 CP**

German Module Title		Molekularbiologische Grundlagen und Reproduktionstechniken in der Tierzüchtung				
Module Coordinator		Prof. Dr. Gesine Lühken				
Prerequisites for Participation		Animal Breeding (BK 46)				
Learning Outcomes		The students • have knowledge of important methods of molecular biology and reproduction technology which are applied in animal breeding and genetics, • can estimate the suitability of methods and techniques for practical animal breeding. • are familiar with the practical use of these methods and techniques for different livestock species				
Module Content		• molecular genetics, cytogenetic and biochemical principles, • fundamentals of molecular and reproduction biological techniques, • application of reproduction techniques and molecular biologic methods in livestock breeding.				
Forms of Instruction		Lecture (91%), Excursion (9%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	42	84			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion	4	6			
	Homework					
		46	90	14	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) 10 exercises and written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Exercises (30%), written examination (70 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		https://www.uni-giessen.de/cms/fbz/fb09/institute/ith/ag-luehken				

BP 047 - Statistical and Population Genetic Principles for Animal Breeding	**6. Sem.;**	**6 CP**

German Module Title		Statistische und populationsgenetische Grundlagen für die Tierzüchtung				
Module Coordinator		Prof. Dr. Sven König				
Prerequisites for Participation		Animal Breeding (BK 46)				
Learning Outcomes		The students • have fundamental knowledge of multifactorial statistics and the implementation and assessment of linear models and variance components in animal breeding and their causes, • are qualified for the calculation of simple variance/covariance components with the help of simple linear models.				
Module Content		• applying biostatistics methods (linear models) • definition of fixed and random effects • modelling fixed, random and mixed models • comparing models • estimating effects and variance components from parental descendant regression as well as full- and half-sibling analyses • requirements of herd registration • information logistics in animal breeding				
Forms of Instruction		Lecture (83%), Practical Training (17%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	50	90			
	Seminar					
	Practical Training/ Laboratory	10				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_erhardt/index.htm				

BP 048 - Prophylaxis and Health Programs					**4. Sem.;**	**6 CP**
German Module Title		Prophylaxe- und Gesundheitsprogramme				
Module Coordinator		Prof. Dr. Steffen Hoy				
Prerequisites for Participation		Housing and Ecology of Farm Animals (BK 26)				
Learning Outcomes		The students have knowledge and skills in • animal health management, • monitoring animal diseases and • single and herd disease prophylaxis with an animal-friendly environmental design.				
Module Content		• pestilential prophylaxis, • biotic and abiotic factors when transporting animals, including the legal regulations • systems of herd health monitoring, feedback of slaughterhouse findings • health and management methods with a single animal or a herd (e.g. ferric application, claw trimming, neonate sustenance) • technopathies and infectious multifactorial diseases • prophylaxis of gastro-intestinal, respiratory and claw diseases				
Forms of Instruction		Lecture (75%), Seminar (15%), Practical Training (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	45	90			
	Seminar	9				
	Practical Training/ Laboratory	6				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_hoy/index.htm				

BP 049 - Environmental Effects of Farm Animal Housing					**4. Sem.;**	**6 CP**
German Module Title		Umweltwirkungen der Tierhaltung				
Module Coordinator		Prof. Dr. Steffen Hoy				
Prerequisites for Participation		Housing and Ecology of Farm Animals (BK 26)				
Learning Outcomes		The students • are familiar with the methods for measuring the effects of animal husbandry on the environment; • can generate approaches for reducing the emissions of gases, dusts and smells from animal husbandry, • can evaluate the impacts animal husbandry has on the environment.				
Module Content		• concentrations, emissions and immissions of gases, dusts and germs • tenacity of bacteria, viruses and parasites in the environment • vectors of microorganisms in the environment • water and sewage in or from animal husbandry • treatment and exploitation of farmyard manure, liquid manure, swill and sludge • carcass disposal				
Forms of Instruction		Lecture (75%), Seminar (15%), Practical Training (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	45	90			
	Seminar	9				
	Practical Training/ Laboratory	6				
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/tierzucht/ag_hoy/index.htm				

BP 050 - Feeding Strategies for Livestock					**4. Sem.;**	**6 CP**
German Module Title	Ernährungspraxis von Nutztieren					
Module Coordinator	Prof. Dr. Klaus Eder					
Prerequisites for Participation	Animal Nutrition (BK 22)					
Learning Outcomes	The students • have knowledge of practical feeding of various farm animal species under different performance and location conditions • have knowledge of the relationship between nutrition, animal health, product quality and ecological aspects in livestock feeding, • have knowledge of opportunities to prevent metabolic diseases in farm animals by nutritional intervention.					
Module Content	• specific demand and supply of livestock (ruminants, pigs, poultry, horse) with energy and nutrients for breeding, reproduction and fattening • fundamentals of sustainability in animal nutrition • feeding strategies and formulars for different production intensities • relationship between nutrition, animal health, product quality and ecological aspects					
Forms of Instruction	Lecture (100%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	60	90				
Seminar						
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe		Duration 1 Semester			
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/tierernaehrung/					

BP 051 - Special Animal Feed Science					**5. Sem.;**	**6 CP**
German Module Title	Spezielle Futtermittelkunde					
Module Coordinator	Prof. Dr. Klaus Eder					
Prerequisites for Participation	Animal Nutrition (BK 22)					
Learning Outcomes	The students • can classify the fodder value of feedstuff • have general knowledge of the regulatory framework of feedstuff • know the benefits and harmful effects of crucial microorganisms in feedstuff • can give recommendations for quality assurance and loss reduction of feedstuff during conservation and storage • are familiar with the fundamental analytical determination of the quality and the nutrient value of feedstuff • are able to prepare a current seminar topic or project with the relevant literature and to present the results					
Module Content	• quality characteristics and assurance of analytical procedures • sampling procedures and latitudes in feedstuff control • quality of mixed feedstuff • nutritional evaluation of feedstuff and estimation procedures • biological and chemical principles of food conservation • hygienic quality of feedstuff					
Forms of Instruction	Lecture (50%), Seminar (50%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	30	30				
Seminar	30	60				
Practical Training/ Laboratory						
Exercises						
Excursion						
Homework						
	60	90		30	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) written examination, Seminar paper or b) examination defined by the lecturer (see Special Regulation § 8)					
Module examination – Components of final grade	Oral examination (75 %), Seminar paper (25 %)					
Module examination – Form of module component retake examination						
Module examination – Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)					
Frequency	WiSe		Duration 1 Semester			
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/tierernaehrung/					

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BP 052 - Introduction to Feed Analysis					**4. Sem.;**	**6 CP**
German Module Title		Grundlagen der Futtermittelanalytik				
Module Coordinator		Prof. Dr. Klaus Eder				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain the insight and practical skills for implementing analysis procedures in stages, • learn to analyse feed using practice-oriented methods and to evaluate the results, • can assess the quality of feed in a sensory manner.				
Module Content		• analysing feed composed of selected ingredients, energy, additives, undesirable substances, pollutants, pest infestation and mycosis • sensory assessment of stalk feed (greenstuffs, ensilage, roughage), cereals and compound feeding stuffs • performance of an in vitro method to estimate the level of energy in feedstuff for ruminants				
Forms of Instruction		Seminar (10%), Practical Training (90%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar	6				
	Practical Training/ Laboratory	54	90			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		50				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/tierernaehrung/				

BP 055 - Investment Decisions, Corporate Financing and Controlling in the Agro-Food Industry	**6. Sem.;**	**6 CP**

German Module Title		Investition, Finanzierung und Controlling in der Agrar- und Ernährungswirtschaft				
Module Coordinator		Prof. Dr. Rainer Kühl				
Prerequisites for Participation		None (recommended: Mathematics and Statistics (BK 05), Economics and Business Management I (BK 03))				
Learning Outcomes		The students • have knowledge of the wide range of methods of investment, financial theories and operational controlling, • are familiar with decision-related methods of funding and investment research procedures and balancing, • can choose and apply the appropriate investment, cost and performance assessment method for a given operational decision to be made				
Module Content		• sources (external and internal) and financial instruments, • financial mathematic principles, managerial budgeting concerning fiscal decisions (budgetary accounting: capital demand/optimisation), • asset and capital structure organisation, rules of financing, optimal debt ratio, • investment decisions in the agricultural and nutritional economy, • evaluation of financial and real investments, • consideration of risks, portfolio selection theory, leverage risk, • fiscal balance sheet analysis (assets and liabilities structure, liquidity situation, solidity of financing), • setup and accomplishment of the actual-cost and plan-cost-performance-calculation • fundamentals of accounting and external book-keeping.				
Forms of Instruction		Lecture (70%), Exercises (30%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	42	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	18				
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ibae/foodeconomics				

BP 056 - Agricultural Production Planning					**5. Sem.;**	**6 CP**
German Module Title		Agrarproduktionsplanung				
Module Coordinator		Prof. Dr. Joachim Aurbacher				
Prerequisites for Participation		None				
Learning Outcomes		The students • have knowledge and skills in the organisation and guidance of the essential branches of production in agricultural enterprises, • are familiar with the techniques for solving decision problems in production management when deciding on the production programme in accordance with the natural and economic framework conditions and in designing the production methods and branches.				
Module Content		• techniques for solving decision problems in production management using cost-performance analyses • deDateing the relative preference of action alternatives within and between the branches of production • deDateants for planning fruit rotation and the conditions of cultivation • decision problems for cereal cropping, grain maize cultivation, oil seed and legume cultivation, potato and sugar beet cultivation • Economics of biogas plants and biomass fuel • designing the production programme for operational plant production • operational principles for keeping farm animals • decision problems in the branches of keeping cattle, sheep, pigs and poultry • economic features of organic agriculture • the most relevant agricultural funding programme and their impacts on business management • deDateants for deciding on the operational production programme in accordance with the operational and economic framework conditions				
Forms of Instruction		Lecture (67%), Exercises (33%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	20	30			
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written or oral examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written or oral examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ibae/Agrarwirtschaft				

BP 058 - World Food Economy					**4./6. Sem.;**	**6 CP**
German Module Title		Welternährungswirtschaft				
Module Coordinator		Prof. Dr. P. Michael Schmitz				
Prerequisites for Participation		Policy and Markets in the Agricultural and Food Economy (BK 14) and Economics and Business Management I (BK 03)				
Learning Outcomes		The students • can explain the real and monetary external relations in the area of agriculture and nutrition and their development; can estimate the consequences of foreign economic interventions, • understand the concept of the integration of industrial and developing countries in the global economy and regional economic policy for nutrition and employment security.				
Module Content		• theories of int. trade with agricultural and nutritional products • agrarian trade policies – impact analysis and welfare economic assessment • new political economics of the agrarian trade policy • factor mobility, globalisation and regional competition • balance of payments and exchange rates • exchange rate policy and monetary unions • development of the global food markets • world food situation, development and analysis of causes • strategies in development policy for nutrition security • globalisation and its implications from the point of view of developing countries • new farming and agrarian policy • resource utilisation • new technologies for nutrition security				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	30			
	Seminar	30				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	30	60	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, seminar paper or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (50 %), Seminar paper (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		44				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/prof-ae				

BP 059 - Resource Utilisation, Environmental Protection and Policy	**5. Sem.;**	**6 CP**

German Module Title		Ressourcennutzung, Umweltschutz und -politik				
Module Coordinator		Prof. Dr. Ernst-August Nuppenau				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain fundamental knowledge regarding the interrelation of agriculture, resources and environment from an economic and ecologic point of view, • gain the skill to understand how human action causes environmental problems and which solution approaches exist from an eco-environmental and eco-political point of view, • understand the social dilemmas in environmental policy and can discuss eco-political solution approaches, • gain knowledge of the correlation of agriculture and environment on the basis of economic calculations.				
Module Content		• eco-environmental fundamentals for agronomists • nature and environment as a scarce economic resource • circulatory economics, irreversibility, sustainability and economy • economic optimisation; balance of markets • general welfare-theoretic analysis of the nature protection problem • welfare analysis of the markets for private goods; external effects • external effects and internalisation of external effects • market failures in the case of environmental resource allocation • introduction to the theory of games • external effects and the Coase theorem • public goods and social dilemmas • social discounting and justice; environmental ethics • environmental politic analyses for agronomists • principles of environmental politics • deDateing economically and politically optimal external effects • restrictions as non-fiscal instruments • pigovian taxes as fiscal instruments • emission allowance trading; subsidies • balancing payments for environmentally compatible farming • structure of cost-benefit-analysis • welfare-theoretic principles of assessment • contingent assessment (WTP analysis) • travel costs method; hedonic price approach;				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Oral examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b) mündliche Prüfung oder Wiederholung/Überarbeitung der in b) festgesetzten Prüfungsleistung.				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/pau				

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BP 062 - Professional Communication and Presentation					**4./6. Sem.;**	**6 CP**
German Module Title		Professionelles Kommunizieren und Präsentieren				
Module Coordinator		Prof. Dr. Jasmin Godemann				
Prerequisites for Participation		None (recommended: Introduction to Communication and Media (BP 127))				
Learning Outcomes		The students: • scientific competences: e.g. fundamental concepts for a successful mediation of communication contents • gain methodological and analytical competences: e.g. the ability to reflect on practical experiences based on theories and methods, to classify and analyse communication processes • achieve competences: e.g. practice relevant learning of successful communication techniques, the ability to solve communication problems • improve social competences: e.g. communicative competences by applying argumentation techniques, presentations and speaking freely in front of an audience				
Module Content		• principles and models of communication • presentations and rhetoric • effective communications techniques • active training exercises and reflections				
Forms of Instruction		Lecture (30%), Seminar (30%), Practical Training (40%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	18	30			
	Seminar	18				
	Practical Training/ Laboratory	24	30			
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Presentation (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/fbz/fb09/institute/wdh/kommunikation				

BP 064 - Ecological Soil Functions						**3. Sem.;**	**6 CP**
German Module Title		Ökologische Bodenfunktionen					
Module Coordinator		Prof. Dr. Jan Siemens					
Prerequisites for Participation		BK 39 and BK 35 (of each module the soil science part)					
Learning Outcomes		The students • have profound physical and chemical knowledge as a basis for recognising and evaluating ecological soil functions as well as conducting soil analyses autonomously, • are experienced in the planning of studies, sampling as well as the physical and chemical investigation of soils and their components.					
Module Content		Lecture: • detailed fundamentals of soil physics and soil chemistry • characteristics and dynamics of the water, air, nutrient and pollutant balance • development of and interaction between anorganic and organic soil components • transformation and translocation processes as well as their relevance for location and utilisation characteristics. Instructed laboratory tutorials: • pedologic laboratory tutorials regarding taking of samples, physical and chemical investigation methods of soil and the interpretation of analysis results					
Forms of Instruction		Lecture (50%), Laboratory (50%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	90				
	Seminar						
	Practical Training/ Laboratory	30					
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		64					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/bkbe					

BP 065 - Water Quality and Nutrient Fluxes					**4. Sem.;**	**6 CP**
German Module Title		Gewässerqualität und Stoffhaushalt				
Module Coordinator		Prof. Dr. Lutz Breuer				
Prerequisites for Participation		None (recommended: Basics in Landscape Hydrology (BK 37))				
Learning Outcomes		The students • have fundamental knowledge of the components of surface and groundwater quality • are familiar with the chemical and morphological impacts on water quality • can specify measures to improve water quality • have knowledge of physical principles of the global energy balance • have knowledge of sources, turnover and sinks of trace gases • have knowledge of the pertinent legal regulations.				
Module Content		• Chemical, biological and morphological components of water quality • Interactions between land use, matter fluxes and water quality • Global warming, energy balance and climate effects of trace gases • Legislative basis of water protection policies and measures • Excursion on current issues of water quality (during the lecture-free period).				
Forms of Instruction		Lecture (80%), Excursion (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	48	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion	12				
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination and seminar paper or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (80%), Seminar paper (20%)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		60				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/ilr/wasser				

BP 066 - Soilscapes of Middle Europe					**2. Sem.;**	**6 CP**
German Module Title		Bodenlandschaften Mitteleuropas				
Module Coordinator		Prof. Dr. Jan Siemens				
Prerequisites for Participation		BK 39 and BK 35 (of each module the soil science part)				
Learning Outcomes		The students • have knowledge about the diversity of landscapes in Central Europe caused by their landscape genesis, • gain an insight in the relevance of quaternary (geologically young) sediments for soil formation and the location quality in Central Europe, • have knowledge of the soil groups of the most important landscape types in Central Europe, • can estimate the importance of landscape-specific use and stress potentials for environmentally compatible land use, • are experienced in investigating, describing and evaluating soils in fields • classification of soil functions in fields with simple methods.				
Module Content		Lecture: • principles of the German soil systematics • factors of soil formation, processes, soil groups and local characteristics in the most important natural regions of Germany and Central Europe. Field trip seminars: • pedalogical practice in fields concerning mapping, investigation, description and assessment of typical soils and soil groups in the most important natural regions of the federal states of Hessen and Schleswig-Holstein •				
Forms of Instruction		Lecture (50%), Practical Training (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	70			
	Seminar					
	Practical Training/ Laboratory	30	20			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		60				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/bkbe				

BP 069 - Project in Environmental Management – Biodiversity					**4. Sem.;**	**6 CP**
German Module Title	Projekt zur Umweltsicherung - Biodiversität					
Module Coordinator	Prof. Dr. Dr. Annette Otte					
Prerequisites for Participation	Geographic Information System (BP 076) (parallel course attendance is possible)					
Learning Outcomes	The students • are able to handle independently and application-oriented specific objects and issues within rural areas, • are able to appropriately implement research and planning methods and correctly evaluate their outcomes, • are able to perform within workgroups and can cooperate between interdisciplinary and other complementary workgroups, • are able to outline their results in a proper written form and present them.					
Module Content	• The students produce a project work about regional environmental problems and focus upon the biodiversity. • Using the example of a region, a landscape or a segment of a landscape specific question are independently targeted by the students (in small working groups). • Depending on the problem various floristic-, vegetation- and location-related inquiries, habitat and landscape related field research, mapping, lab analysis (e.g. supply of ground-seeds), design work (using GIS) and/or surveys of local actors etc. shall be performed. • The results shall be discussed and suggested solutions shall be presented.					
Forms of Instruction	Exercises (100%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar						
Practical Training/ Laboratory						
Exercises	60	60				
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) presentation of project results and written composition (incl. maps) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Presentation (30 %), Written composition (70 %)				
	Form of module component retake examination					
	Form of module retake examination	Revision of the written composition (within four weeks) or repetition/revision of the examination as defined in b)				
Frequency	SuSe	Duration 1 Semester				
Intake capacity	30					
Language	German					
Website	http://www.uni-giessen.de/landschaft					

BP 070 - Project in Environmental Management – Water Erosion					**4. Sem.;**	**6 CP**
German Module Title		Projekt zur Umweltsicherung - Wassererosion				
Module Coordinator		Prof. Dr. Lutz Breuer				
Prerequisites for Participation		None (Geographic Information Systems (BP 076))				
Learning Outcomes		The students • know how to apply GIS tools for environmental research • have in-depth knowledge of spatial analysis with GIS • can create their own spatial analysis models on the basis of a model description • can assess the influence of agriculture on soil loss by water erosion • know the most important factors of water erosion and can assess their impacts				
Module Content0		• Principles of water erosion and the Universal Soil Loss equation (USLE) • Simulation of soil loss based on spatial data analysis using ArcGIS • Graphical programming using the ArcGIS model builder • Derivation of suitable measures to reduce water erosion • Production of a project report on environmental issues in a region on the example of water erosion				
Forms of Instruction		Lecture (17%), Exercises (83%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	10	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	50				
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) project work (written composition) and presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Project work (70 %), presentation (30 %)				
	Form of module component retake examination					
	Form of module retake examination	Revision of the project work (within four weeks) or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/ilr/wasser				

BP 071 - Project in Environmental Management – Soil Science					**4. Sem.;**	**6 CP**
German Module Title	Projekt zur Umweltsicherung - Bodenkunde					
Module Coordinator	Prof. Dr. Jan Siemens					
Prerequisites for Participation	Ecological Soil Functions (BP 064), Ecology and Soil Science (BK 39) (Soil Science parts)					
Learning Outcomes	The students • can work autonomously on practical issues and problems of soil science in rural areas considering scientific aspects • are able to carry out sampling, analysis and mapping methods appropriately and assess the results correctly • can work in a team and can cooperate with complementary work groups • are able to present their results appropriately in written and oral form					
Module Content	• writing of a project report on regional issues of soil science with a focus on soil characteristics and soil functions • autonomous work (in small groups) on issues on the example of a region, a landscape, a landscape section • depending on the research questions surveys may be required on soil, habitat, landscape research in the fields, mappings, laboratory analysis (e.g. nutrient distribution), planning procedures (amongst others with the help of GIS), questioning of local persons (e.g forester, farmers, cultivators)					
Forms of Instruction	Exercises (100%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar						
Practical Training/ Laboratory						
Exercises	60	60				
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination – Form(s) of assessment	a) presentation of project results and written assignment (incl. maps) or b) examination defined by the lecturer (see Special Regulation § 8)					
Components of final grade	Presentation (30 %), Written Assignment (70 %)					
Form of module component retake examination						
Form of module retake examination	Revision of the written assignment (within four weeks) or repetition/revision of the examination as defined in b)					
Frequency	SuSe		Duration 1 Semester			
Intake capacity	30					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/bkbe					

BP 072 - Agricultural Utilization of Waste						**4. Sem.;**	**6 CP**
German Module Title		Abfallverwertung in der Nahrungsmittelkette					
Module Coordinator		Prof. Dr. Stefan Gäth					
Prerequisites for Participation		None					
Learning Outcomes		The students • have fundamental, practice-oriented knowledge regarding the material exploitation of mineral and organic waste in plant and animal production and its preparation, • are familiar with the legal background, policies and procedures of quality assurance, • can evaluate the contents of wastes and their utility, • can measure the potential burden of value-reducing contents (organic and anorganic pollutants), • have knowledge of procedures for analysing different kinds of waste and rating their quality, • gain insight into the characteristics of carryover, • have knowledge of the economic and ecologic assessment of waste utilisation in the food chain.					
Module Content		• legal framework conditions • occurrence of various mineral and organic types of waste (forage, compost, sewage sludge, farm fertilizer) • segmentation into enriching and value-reducing contents • origin and preparation processes of the different waste types • creating balances and evaluating them ecologically and economically • verification procedures and quality assurance, quality management					
Forms of Instruction		Lecture (50%), Seminar (25%), Practical Training (13%), Excursion (12%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	60				
	Seminar	15					
	Practical Training/ Laboratory	8					
	Exercises						
	Excursion	7					
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)					
Frequency		SuSe		Duration 1 Semester			
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/abfall-und-ressourcenmanagement/view?set_language=de					

BP 073 - Vegetation Ecology					**4. Sem.;**	**6 CP**
German Module Title		Vegetationsökologie				
Module Coordinator		Prof. Dr. Dr. Annette Otte				
Prerequisites for Participation		Soil and Landscape Ecology (BK 35)				
Learning Outcomes		The students • have fundamental knowledge of vegetation ecology and the features of plant communities, • understand the fundamental terms of site ecology, • have knowledge of ecological stress factors and can analyse the causes of competition and coexistence, • understand the impact of geological processes on the vegetation, • understand the causes and effects of land use on vegetation, • are familiar with the characteristics of important plant families of Central Europe and can identify a selection of the most common vascular plants,				
Module Content		• features of plant communities, • fundamentals of vegetation ecology, • fundamentals of site ecology, • ecological stress factors, • competition and coexistence, • chorology, • development of the vegetation in Central Europe, • overview of the vegetation of various habitats in Central European , • laboratory tutorials for the identification the most important plant families of Central Europe, • field exercises for vegetation documentation of typical biotopes of cultural landscapes in Central Europe.				
Forms of Instruction		Lecture (50%), Practical Training (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	60			
	Seminar					
	Practical Training/ Laboratory	30	30			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination (90 Min.), 2 reports, herbarium or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (60 %), reports (30 %), herbarium (10 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination (90 Min.), reports, herbarium or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		50				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/loek/home/view?set_language=de				

BP 076 - Geographic Information Systems					**3. Sem.;**	**6 CP**
German Module Title		Geographische Informationssysteme (GIS)				
Module Coordinator		Prof. Dr. Lutz Breuer				
Prerequisites for Participation		None				
Learning Outcomes		The students • are familiar with the structure, the functions and the fields of application of geographic information systems in landscape research, • have fundamental knowledge of the application and use of GIS features gained through laboratory work with ArcGIS, • can arrange an ArcGIS project autonomously, • broaden and deepen their knowledge with the help of practical project examples from the relevant subject areas (hydrology, landscape ecology, soil science)				
Module Content		• introduction to the fundamentals of GIS • data types, data acquisition and data administration, coordinate systems, analysis options • GIS features: setting up digital maps, editing, digitalising, creating keys, data base operations, analysing grid maps • practical work on computer with a GIS based on examples of topics covered in the degree course (e.g. soil mapping, landscape development, water contamination)				
Forms of Instruction		Lecture (50%), Practical Work (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	60			
	Seminar					
	Practical Training/ Laboratory	30				
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination (practical examination on computer) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination (practical examination on computer) or repetition/revision of the examination as defined in b)				
Frequency		WiSe (optional an additional block course in the summer semester)		Duration 1 Semester		
Intake capacity		90 (3 parallel courses in the WiSe) + 30 (block module in the SoSe)				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/ilr/wasser				

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BP 077 - Principles of Nutrition Ecology					**2. Sem.;**	**6 CP**
German Module Title		Grundlagen der Ernährungsökologie				
Module Coordinator		Prof. Dr. Gunter P. Eckert				
Prerequisites for Participation		None				
Learning Outcomes		The students • have fundamental knowledge of the influencing factors of different dimensions of nutrition, environment, society and economy • can demonstrate the complex interactions between different factors • can transfer nutritional knowledge into a nutritional ecologic correlation, • can explain the role of nutrition in the sustainability discussion, • are able to work scientifically on issues of nutrition ecology and can present the result				
Module Content		• dimensions of nutrition and their backgrounds • interconnections, multidimensionality and dynamics of nutrition • consequences of different food habits on sanitary, ecological, social and economic aspects of nutrition • influencing factors and framework conditions of the food supply chain • principles of sustainability • interdisciplinary solution approaches • examples for the solving of complex nutrition-related problems in an interdisciplinary manner • methodological fundamentals of scientific research, analysis, writing and presentation				
Forms of Instruction		Lecture (20%), Seminar (70%), Excursion (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	12	60			
	Seminar	42				
	Practical Training/ Laboratory					
	Exercises					
	Excursion	6				
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) oral examination, presentation) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Oral examination (60 %), presentation (40 %) (all examination components have to be at least sufficient)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		60				
Language		German				
Website		www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/nutr-ecol				

BP 078 - Principles of Nutritional Medicine					**5. Sem.;**	**6 CP**
German Module Title		Grundlagen der Ernährungsmedizin				
Module Coordinator		Prof. Dr. Gunter P. Eckert				
Prerequisites for Participation		Human Nutrition (BK 13)				
Learning Outcomes		The students • have knowledge of the pathophysiological fundamentals of nutritional medicine and the clinics for nutritional diseases, • can prepare and present on the topic of clinics and therapy of nutrition-related diseases.				
Module Content		• artificial nourishment • diarrhoea in childhood • cancer and diet • metabolic disorder • gastro-intestinal diseases • liver-gall-pancreas-diseases • diabetes mellitus • kidney and autoimmune diseases • rachitis and osteoporosis • iodine deficiency/thyroid diseases • eating disorders				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	90			
	Seminar	30				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination and presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (66 %), presentation (34 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		200				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/krawinkel				

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BP 080 - Energy Economics and Energy Management					**3. Sem.;**	**6 CP**
German Module Title		Energiewirtschaft und Energiemanagement				
Module Coordinator		Prof. Dr. Stefan Gäth				
Prerequisites for Participation		None				
Learning Outcomes		The students have knowledge of • physical fundamentals of energy generation and transformation (electricity/heat), • different processes for generating renewable energy (geothermal energy, wind energy, photo energy, hydro energy, biomass energy), • different processes for generating conventional energy (gas and steam, coal), • processes for energy storage, • goals of base load and peak demand controlling, • processes and problems of network controlling, • energy usage of different users, • processes/potential for increasing the energy efficiency				
Module Content		• physical fundamentals, units, measurement, regulation, control, electrical and thermal efficiency theory • process fundamentals and boundary conditions of the generation of renewable and conventional energy (geothermal energy, wind energy, photovoltaic energy, photo thermal energy, hydro energy, biomass energy, gas and steam, coal, nuclear power) • authorisation issues • energy management according to DIN EN 16001 • network management and load control • goals of national and international energy politics				
Forms of Instruction		Lecture (50%), Practical Training (25%), Excursion (25%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	30			
	Seminar					
	Practical Training/ Laboratory	15	30			
	Exercises					
	Excursion	15				
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/abfall-und-ressourcenmanagement				

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BP 081 - Special Botany of Agricultural Crops					**2. Sem.;**	**6 CP**
German Module Title		Spezielle Botanik der Nutzpflanzen (Spezielle Botanik I)				
Module Coordinator		PD Dr. Hans-Werner Koyro				
Prerequisites for Participation		None				
Learning Outcomes		The students • have knowledge of the processes and manifestations of the life of plants in interaction with environmental factors, • understand the adaption mechanisms of plants to specific conditions regarding location, • can describe the flow of energy and substances, • are familiar with the most important crops, particularly food plants, their usable components and ingredients, • can prepare simple plant compounds autonomously and investigate them using a light microscope, • have knowledge regarding the composition and function of the different plant components.				
Module Content		• the environment of plants • carbon, mineral and water balance of plants • plants under stress • use of plants for food and technology • utilisable ingredients (carbohydrates, lipids, proteins) • specific use as vegetables, fruits and luxury foods • preparation and light microscopy investigation of plants • plant cells and their compartments • composition and function of the leaf, the root and the sprout •				
Forms of Instruction		Lecture (50%), Practical Training (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	60			
	Seminar					
	Practical Training/ Laboratory	30	30			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb08/biologie/pflanzenoek/institut				

BP 082 - Special Botany and Plant Ecology					**2. Sem.;**	**6 CP**
German Module Title	Spezielle Botanik und Pflanzenökologie (Spezielle Botanik II)					
Module Coordinator	PD Dr. Hans-Werner Koyro					
Prerequisites for Participation	None					
Learning Outcomes	The students • have knowledge of the processes and manifestations of the life of plants in interaction with environmental factors, • understand the adaption mechanisms of plants to specific conditions regarding location, • can describe the flow of energy and substances, • can classify plants using identification keys, • are familiar with a variety of the typical flora species of Central Europe, • have knowledge regarding the composition and function of the different plant components.					
Module Content	• the environment of plants • carbon, mineral and water balance of plants • plants under stress • deDateation of plants with importance in agriculture • composition and function of the leaf, the root and the sprout •					
Forms of Instruction	Lecture (25%), Practical Training (75%)					
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	15	30			
	Seminar					
	Practical Training/ Laboratory	45	60			
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100%)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb08/biologie/pflanzenoek/institut				

BP 084 - Anatomy and Physiology II					**4. Sem.;**	**6 CP**
German Module Title	Anatomie und Physiologie II					
Module Coordinator	Prof. Dr. Wolfgang Skrandies					
Prerequisites for Participation	Anatomy and Physiology I (BK 07)					
Learning Outcomes	The students • have profound knowledge of cytology, histology and the microscopic human anatomy, • have knowledge about neurovegetative functions, • have knowledge of basic principles of sensory physiology, • have knowledge of the functions of different sensory modalities, • are familiar with physiological investigation methods, • can elaborate on essential anatomic and physiologic questions autonomously, • can perform microscopic studies.					
Module Content	Anatomy • microscopical anatomy and histology/use of the microscope • epithelia • conjunctive and supporting tissue, muscle • blood vessels, cells of the blood • nervous system • organs of the gastrointestinal tract: oesophagus, stomach, intestines, liver, pancreas Physiology • sensory physiology • chronobiology & nutrition • circadian rhythms • neuropeptides and neurohormones & nutrition • Optional visit of a physiological laboratory (MPI Frankfurt/Univ. Giessen)					
Forms of Instruction	Seminar (25%), Practical Training (50%), Excursion (25%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar	15	20				
Practical Training/ Laboratory	30	40				
Exercises						
Excursion	15					
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) Anatomy: oral/practical examination and presentation; Physiology: presentation/written assignment or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Anatomy oral/practical examination 25 %, presentation 25 %), Physiology (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Respective part of the examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe			Duration 1 Semester		
Intake capacity	30					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb11/institute/physiologie/forschung/skrandies					

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BP 087 - Physiology and Biochemistry of the Gastrointestinal Tract					**3. Sem.;**	**6 CP**
German Module Title		Physiologie und Biochemie des Gastrointestinaltraktes				
Module Coordinator		Prof. Dr. Uwe Wenzel				
Prerequisites for Participation		None (recommended: Nutritional Physiology)				
Learning Outcomes		The students • have profound knowledge of the anatomy and morphology of the GIT • have profound knowledge of digestive processes • are familiar with the active principles of hormones				
Module Content		• morphologic differences and specialties along the GIT • molecular mechanisms of secretion, digestion and resorption • gastrointestinal hormones and their effects • mediators of hunger and satiety • neuronal networks of the GIT • the intestine as an immune organ • effects of the intestinal flora on the organism				
Forms of Instruction		Lecture (50%), Seminar (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	60			
	Seminar	30				
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/wenzel				

BP 088 - Molecular Mechanisms underlying Degenerative Diseases				**6. Sem.;**	**6 CP**
German Module Title	Molekulare Grundlagen degenerativer Erkrankungen				
Module Coordinator	Prof. Dr. Uwe Wenzel				
Prerequisites for Participation	None (recommended: Nutritional Physiology (BK 10))				
Learning Outcomes	The students • have knowledge of the molecular effects of hormones and cytokines, • understand cellular signal transduction, • have knowledge of the intermediary metabolism, • have fundamental knowledge of immunology.				
Module Content	• cancer and diet • ageing processes • nutrition and metabolic syndrome • nutrition and vascular diseases • autoimmune disease, e.g. diabetes mellitus, type I • inflammatory bowel diseases • food allergies, gluten-sensitive enteropathy • food intolerances, e.g. lactose intolerance				
Forms of Instruction	Lecture (50%), Seminar (50%)				
Workload	180 hours				
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
	a) contact hours	b) preparation/ revision			Total
Lecture	30	60			
Seminar	30				
Practical Training/ Laboratory					
Exercises					
Excursion					
Homework					
	60	60	30	30	**180 / 6 CP**
Module examination – Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
Components of final grade	Written examination (100 %)				
Form of module component retake examination					
Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe		Duration 1 Semester		
Intake capacity	No limit				
Language	German				
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/wenzel				

BP 090 - Work Placement					**4.-6. Sem.;**	**12 CP**
German Module Title		Berufspraktikum				
Module Coordinator		Professors of faculty 09				
Prerequisites for Participation		12 Bachelor coremodules have to be successfully completed				
Learning Outcomes		The students • gain practical know-how and skills in their respective companies and understand the connections between their studies and practical experience • gain knowledge regarding business activities and forms of organization • are familiar with operational processes and interrelations • gain insight into the production processes of goods and services and their marketing as well as insight into the management and administration of the companies in which the placements take place				
Module Content		• Assistance in companies within the fields of work of agricultural sciences, environmental sciences, nutritional sciences and home economics • active participation in the production, administration and service sectors as well as in special projects of the companies • Autonomous preparation of a company profile and of a written assignment on the work placement				
Forms of Instruction		Work placement (100%)				
Workload		360 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar					
	Practical Training/ Laboratory	360				
	Exercises					
	Excursion					
	Homework					
		360	0			**360 / 12 CP**
Module examination	Form(s) of assessment	Written assignment on the work placement				
	Components of final grade	Written assignment (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Revision of the written assignment (within 4 weeks)				
Frequency		WiSe und SuSe		Duration mind. neun Wochen		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/studium/praktikum				

BP 091 - Business Environmental Management						**4. Sem.;**	**6 CP**
German Module Title		Betriebliches Umweltmanagement					
Module Coordinator		Prof. Dr. Stefan Gäth					
Prerequisites for Participation		None					
Learning Outcomes		The students • are familiar with the instruments of environmental management (environmental audit, EMAS, ISO 9.000, ISO 14.00X), • have knowledge about approval procedures and environmental impact assessments • have an insight into the methods and means for product-integrated environment protection (PIUS), • have knowledge of the tasks and rights of individual environmental officers, • have an insight into laws concerning operational environment protection (Federal Emission Control Act, technical instructions, REACH,..), • are experienced in quality management.					
Module Content		• legal framework conditions (EC Directives [e.g. REACH], laws [e.g. Water Management Act, Closed Substance Cycle Waste Management Act], regulations [e.g. Ordinance on Hazardous Substances], technical policies [e.g. Technical Instructions on Air Quality Control]) • quality management systems (EMAS, ISO 9.000, ISO 14.00X) • indicators for evaluating the mass and energy efficiency in economic cycles • excursions and exercises with a practical orientation on product-integrated environmental protection in companies • optional: immission control officer certification					
Forms of Instruction		Lecture (50%), Practical Training (25%), Excursion (25%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	60				
	Seminar						
	Practical Training/ Laboratory	15					
	Exercises						
	Excursion	15					
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) oral examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Oral examination (100 %)					
	Form of module component retake examination						
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)					
Frequency		SuSe			Duration 1 Semester		
Intake capacity		No limit					
Language		German					
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/abfall-und-ressourcenmanagement/view?set_language=de					

BP 092 - Introduction to Food Microbiology					**4./6. Sem.;**	**6 CP**
German Module Title		Einführung in die Lebensmittelmikrobiologie				
Module Coordinator		Prof. Dr. Dr. Peter Kämpfer				
Prerequisites for Participation		None				
Learning Outcomes		The students • have fundamental knowledge of food microbiology and food hygiene, of microbiologic methods for detecting bacteria, particularly pathogens, • have fundamental knowledge of the preservation and quality control of food.				
Module Content		• the role of microorganisms in food, factors which influence the existence of microorganisms in food, preservability and spoilage • principles of food fermentation, food hygiene, arrangements for inspection, fundamentals of sterile working, quantifying and identifying bacteria and fungi; • essential differences between and roles of bacterial and fungal groups (Lactobacilli, actinomycetes; spore-forming bacteria, yeasts, fungi imperfecti) in food microbiology • disease agents, preservation of food, conservation • strategies for the biological security of food				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		https://www.uni-giessen.de/cms/fbz/fb09/institute/mikrobiologie/recycling-prozesse				

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

BP 093 - Nutrition and Performance					**4./6. Sem.;**	**6 CP**
German Module Title		Ernährung und Leistung				
Module Coordinator		AkOR, Dr. Sabine Schulz				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain fundamental knowledge in human exercise physiology, • know the relationship between healthy nutrition and performance, • are able to assess the opportunities and limitations of food supplements in sports and are able to differentiate between legal and illegal substances.				
Module Content		• defining and measuring physical capacity (exercise testing) • fundamentals of exercise physiology • training adaptation on cell/organ level • endocrine and nerval regulatory mechanisms • criteria of basic aerobic and anaerobic performance • fatigue, recovery and overtraining • energy supply in sport • carbohydrate loading; fat burning; protein • fluid replacement in sport, nutritional strategies during exercise • oxidative stress and antioxidants; losses and replacement • weight management; eating disorders • distinguishing between functional foods for sports, dietary supplements, pharmaceuticals • ergogenic aids • doping				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written oral examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written or oral examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/schulz				

BP 094 – Counselling and Consulting Skills and Techniques					**3./5. Sem.;**	**6 CP**
German Module Title		Gestaltung von Interaktionsprozessen in der Beratung				
Module Coordinator		Prof. Dr. Jasmin Godemann				
Prerequisites for Participation		Principle and Practices of Counseling and Consulting (BP 007)				
Learning Outcomes		The students • achieve methodological and analytical competences: ability to reflect on practical experiences applying scientific theories and methods • gain social competences: communicative competences; ability to work in a team, decisiveness • achieve competences to act: launching and organization of change processes, didactic/methodological knowledge and abilities as a basis for professional work				
Module Content		• characteristics of individual counselling and group counselling • non-directive counselling according to Carl Rogers – Principles and possible applications for individual counselling • theme-centred interaction according to Ruth Cohn – Principles (TZI) and possible applications for group counselling • moderation as an instrument of professional communication • techniques for professional communication • concepts of professional communication to initiate a change of behavior • conflict solving strategies in counselling • visualization options and the use of media to present content issues • application of methods and instruments to measure the success of counseling				
Forms of Instruction		Lecture (30%), Seminar (30%), Practical Training (40%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	18	30			
	Seminar	18	30			
	Practical Training/ Laboratory	24				
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) presentation and written assignment or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	presentation (25%) and written assignment (75%)				
	Form of module component retake examination					
	Form of module retake examination	Repetition of the presentation and revision of the written assignment within four weeks or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		www.uni-giessen.de/fbz/fb09/institute/wdh/kommunikation				

BP 096 - Food Safety and Stored Product Protection					**3. Sem.;**	**6 CP**
German Module Title		Lebensmittelsicherheit und Vorratsschutz				
Module Coordinator		Prof. Dr. Andreas Vilcinskas				
Prerequisites for Participation		None (recommended: basics in organic chemistry, microbioloy; interest in entomology and mykology; familiar with identification keys)				
Learning Outcomes		The students • have theoretical and practical fundamental knowledge of food safety, • have the ability to work in the context of food safety in the chemical industry, the food industry, in food investigations offices, in agricultural/environmental ministries ("Landeslabor") and other consulting institutions.				
Module Content		• biology, ecology of animal and fungal storage pests • classification of invertebrate and fungal storage pests • physical, chemical and biological methods of stored product protection; beneficial insects to combat food and storage pests organically • formation, chemical analysis and molecular modes of action (toxicology) of mycotoxins in food; examples of food poisoning				
Forms of Instruction		Lecture (70%), Exercises (30%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	42	75			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	18	15			
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/ipaz				

BP 097 - Methods of Interdisciplinary Knowledge Integration					**5. Sem.;**	**6 CP**
German Module Title		Methoden der interdisziplinären Wissensintegration				
Module Coordinator		Prof. Dr. Gunter P. Eckert				
Prerequisites for Participation		All core modules of the Bachelor's study program				
Learning Outcomes		The students • can understand and explain the complexity and interconnections of nutritional problems and are familiar with methods for presenting these, • can correlate and integrate knowledge from different disciplines and subjects related to the topic area of nutrition, • are familiar with methods/approaches of knowledge integration, • can apply the methods of knowledge integration in transdisciplinary and interdisciplinary collaborations to nutritional problems and their solutions.				
Module Content		• analysis of problems related to complex nutritional topics • methods of knowledge integration and application of these methods to complex nutritional topics • forms of cooperative work in problem solving processes • types of knowledge and levels of integration for long-term solution approaches in the field of nutrition • characteristic features of knowledge integration in transdisciplinary and interdisciplinary problem-solving processes • testing and application of methods and instruments for the cooperative interaction in interdisciplinary settings • reflection on the choice of methods appropriate for the problem				
Forms of Instruction		Lecture (10%), Seminar (70%), Practical Training (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	6	80			
	Seminar	42				
	Practical Training/ Laboratory	12				
	Exercises					
	Excursion					
	Homework					
		60	80	20	20	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, project work or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (30 %), project work (70 %) (all results relevant for the final grading have to be at least sufficient)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or oral examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		40				
Language		German				
Website		www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/nutr-ecol				

BP 098 - Renewable Resources						**6. Sem.;**	**6 CP**
German Module Title		Nachwachsende Rohstoffe					
Module Coordinator		Prof. Dr. Sven Schubert					
Prerequisites for Participation		None (recommended: basics in plant nutrition)					
Learning Outcomes		The students • have knowledge of important energy and industrial crops, • are familiar with the material and energetic aspects of renewable resources, • have knowledge of the technological product lines of energy generation from renewable resources,					
Module Content		• energy potentials • energy crops • industrial crops • energy product lines • environmental compatibility of renewable resources					
Forms of Instruction		Lecture (50%), Practical Training (50%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	90				
	Seminar						
	Practical Training/ Laboratory	30					
	Exercises						
	Excursion						
	Homework						
		60	90		30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) oral examination, written assignment and presentation or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Oral examination (50 %), written assignment (25 %), presentation (25 %). Modules completion requires a successful oral exam.					
	Form of module component retake examination						
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)					
Frequency		SoSe		Duration 1 Semester			
Intake capacity		30					
Language		German					
Website		http://www.uni-giessen.de/plant-nutrition/					

BP 099 - Nature Conservation Monitoring					**5. Sem.;**	**6 CP**
German Module Title		Naturschutzmonitoring				
Module Coordinator		Prof. Dr. Dr. Annette Otte				
Prerequisites for Participation		Geographic Information Systems (BP 076)				
Learning Outcomes		The students • understand the importance of natural processes and sustainable use for nature conservation, • understand the relevance of land use history for current and future processes in nature reserves, • are familiar with the main objectives of modern nature conservation, • have knowledge of the methods of the habitat- and landscape-related monitoring in nature conservation, • can apply this knowledge to develop monitoring procedures for concrete near-natural and land use-related nature reserves.				
Module Content		• ecosystem and process studies • procedures of historic and current land use • aims of modern nature conservation • relevant data sources and procedures for the collection of representative data including geostatistical procedures • multitemporal aerial photo interpretation • GIS applications • time series analyses • forecasting methods • elaboration of a monitoring system for a sample preservation area				
Forms of Instruction		Lecture (50%), Practical Training (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	20			
	Seminar					
	Practical Training/ Laboratory	30	40			
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written assignment with poster or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written assignment (60 %), Poster (40 %)				
	Form of module component retake examination					
	Form of module retake examination	Respective part or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/loek/home/view?set_language=de				

BP 101 - Project in Landscape Planning					**6. Sem.;**	**6 CP**
German Module Title	Projekt zur Landschaftsplanung					
Module Coordinator	Prof. Dr. Dr. Annette Otte					
Prerequisites for Participation	Vegetation Ecology (BP 073), Geographic Information Systems (BP 076)					
Learning Outcomes	The students • gain profound skills in the application of acquired knowledge in landscape planning and geographic information systems • acquire skills in analysing problems and transferring solutions, • can collect data relevant for planning (from literature, in the field and with the help of geographic information systems), document them and interpret them in written form, • can autonomously create a poster demonstrating the results.					
Module Content	• the project module in Landscape Planning prepares students for the work on their bachelor thesis. • one current, environmentally relevant subject area of landscape planning and development will be addressed intensively • based on a documentation of existing and additionally collected data, the students will deduce questions concerning the subject area. • solutions for defined case studies will be prepared. For this, abiotic, biotic, economic and other planning-relevant data will be collected and processed with the help of geographic information systems. • the collected data will be analysed, evaluated and presented in a poster.					
Forms of Instruction	Exercises (100%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture						
Seminar						
Practical Training/ Laboratory						
Exercises	60	60				
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) presentation of the written assignment to the plenum (students, supervisor, public audience) and written assignment or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Presentation (50 %) and written assignment (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Presentation (50 %) and written assignment (50 %) or repetition/revision of the examination as defined in b)				
Frequency	SuSe			Duration 1 Semester		
Intake capacity	30					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/ilr/loek/home/view?set_language=de					

BP 103 - Regenerative Energy					**4. Sem.;**	**6 CP**
German Module Title		Regenerative Energie				
Module Coordinator		Prof. Dr. Sylvia Schnell				
Prerequisites for Participation		None (recommended: basic knowledge in microbiology)				
Learning Outcomes		The students • are familiar with different renewable energy carriers and how to implement them, • have knowledge of the concept of biogas plants and the microbialprocesses which occur within these plants, • are familiar with different biotechnological procedures for producing hydrogen, single cell protein and ethanol, • gain an insight into modern methods of plant cultivation, • can contemplate globally on the cultivation of renewable resources, • can critically discuss the environmental compatibility of cultivating renewable resources, • can research scientific topics in the relevant literature and gain special insights with the help of international literature and summerize the major outcomes.				
Module Content		• plant production for biogas plants • soil fertility for the cultivation of energy crops • use of animal excrements and municipal waste in biogas plants • functional principle, management and ecological considerations of biogas plants • microbiological processes in biogas plants • comparison of hydrogen production techniques: production from cyanobacteria and green algae vs. chemical methods from biomass • ethanol production with the help of microorganisms • breeding of desired characteristics (using the example of rapeseed for the production of biodiesel) • environmental compatibility of the cultivation of energy crops using the example of rapeseed • world energy consumption, prices and the relevance of the cultivation of renewable energy carriers				
Forms of Instruction		Lecture (83%), Excursion (17%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	52			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion	8				
	Homework		10			
		48	62	40	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination (prerequisition: seminar paper) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		90				
Language		German				
Website		http://www.uni-giessen.de/fbr09/mikrobiologie/schnell.html				

BP 104 - Cell Biology and Genetics					**2. Sem.;**	**6 CP**
German Module Title		Cell Biology and Genetics				
Module Coordinator		Prof. Dr. Karl-Heinz Kogel				
Prerequisites for Participation		None				
Learning Outcomes		The students • have fundamental theoretical and practical knowledge in cell biology and genetics, • can apply and implement their knowledge of cell biology and genetics in the industry and in authorities and investigations offices, • have practical knowledge of modern microscopy techniques.				
Module Content		• fundamentals of cell biology and genetics • application of the theoretical principles of cell biology and genetics to science and technology • cytological and genetic fundamentals for biotechnological applications in breeding • principles of the molecular biology of vegetal cells				
Forms of Instruction		Lecture (57%), Seminar (43%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	40			
	Seminar	30	40			
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		70	80		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, presentation (each part has to be graded at least sufficient) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (50 %), presentation (50 %)				
	Form of module component retake examination	Repetition/revision of the failed module component				
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		English				
Website		www.uni-giessen.de/ipaz				

BP 106 - Quality of Organic Foods along the Food Supply Chain					**6. Sem.;**	**6 CP**
German Module Title	Qualität ökologischer Lebensmittel entlang der Produktkette					
Module Coordinator	Prof. Dr. Günter Leithold					
Prerequisites for Participation	None (recommended: last study year)					
Learning Outcomes	The students • have profound knowledge of quality Dateology • are acquainted with the essential quality criteria, demands, concepts, principles and characteristics of single sections of selected food supply chains • have knowledge of methods for distinguishing products according to their production method (ecological or conventional) • can evaluate specific organic product qualities and are familiar with detailed methods for quality management					
Module Content	• definition and description of quality Dateology • characteristics of organic food along the food supply chain • structural features of the organic food supply chain • regulations (laws, regulations, guidelines of the eco-organisations, trading standards, concepts, consumer attitudes) concerning the quality of organic products in different stages of the food supply chain • specific reference methods for dedateing food quality • sensory analysis of organic products • quality of specific product categories and realisation of the quality requirements at different production levels • methods for assuring organic quality in primary production • visiting of organic factories at the different stages of the food supply chain • organic agriculture production methods of bread wheat, milk, meat, vegetable and their respective allocation along the value added chain • aspects and mechanisms of the world trade					
Forms of Instruction	Lecture (30%), Seminar (60%), Excursion (10%)					
Workload	180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	18	80			
	Seminar	36				
	Practical Training/ Laboratory					
	Exercises					
	Excursion	6				
	Homework					
		60	80	15	25	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or written examination and project work or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %) or written examination (75%) + project work (25%)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or oral examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe	Duration 1 Semester				
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/institute/pflbz2/olb					

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BP 118 - Plant Breeding and Climate Change					**2. Sem.;**	**6 CP**
German Module Title		Pflanzenzüchtung und Klimawandel				
Module Coordinator		Prof. Dr. Rod Snowdon				
Prerequisites for Participation		None (recommended: knowledge of botany, plant genetics and plant cultivation)				
Learning Outcomes		The students • obtain knowledge about the consequences of climate change for agricultural crop production, • learn major aspects involved in breeding of new, climate-adapted crop varieties, • obtain theoretical and practical knowledge about innovative phenotyping methods for assessing the impact of abiotic and environmental factors on plantperfomance				
Module Content		Breeding methods and aims in the context of climate change • General introduction on consequences of climate change on crop performance • General and specific possibilities to breed for climate-adopted cultivars • Abiotic stress (salt stress, water deficiency, etc.) • Growth chamber experiment and phenotyping of abiotic stress symptoms				
Forms of Instruction		Lecture (67%), practical training (33%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	40	40			
	Seminar					
	Practical Training/ Laboratory	20	20			
	Exercises					
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (70 %), practical training incl. presentation (30 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/plantbreeding/ipz/				

BP 119 - Taxonomy and Biodiversity of Fungal Pathogens					**2. Sem.;**	**6 CP**
German Module Title		Taxonomie und Biodiversität von pilzlichen Krankheitserregern				
Module Coordinator		Prof. Dr. Karl-Heinz Kogel				
Prerequisites for Participation		None				
Learning Outcomes		The students • have fundamental knowledge in the classification of agronomic significant pathogenes of plant deseases and their symtoms and patterns of damage • are able to use the optical and stereoscopic microscope • are familiar with modern diagnostic methods and are able to apply them in the field				
Module Content		• Classification of pathogenes, viruses, bacteria, fungi • Beneficial insects: mycorrhiza • Diagnostic methods of plant deseases and plant pests • Principles of injury margins • Computer-controlled forecast systems • Microscopy systems				
Forms of Instruction		Lecture (40%), Exercises (50%), Excursion (10%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	24	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	30				
	Excursion	6				
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/ipaz				

BP 120 - Taxonomic Identification of Insects					**2. Sem.;**	**6 CP**
German Module Title		Entomologische Bestimmungsübungen				
Module Coordinator		Prof. Dr. Andreas Vilcinskas				
Prerequisites for Participation		None				
Learning Outcomes		The students • have fundamental knowledge of the classification of agronomical significant insects and arachnids • have fundamental knowledge of the development of insects and can discuss the evolution of important pests on the basis of taconomic features • are able to match the damage symtoms and the pests in the field • are able to find insects in the field and can classify them with the help of scientific literature • can use a hand magnifier as well as optical and stereoscopic microscopes • know how to apply diagnostic procedures in the field and know which insecticides (substances) to use				
Module Content		• Systems, taxonomy and biology of insects and arachnids • Diagnostic procedures of the infestastions of plant pests • Inseticides and principles of injury margins • Microscopy techniques				
Forms of Instruction		Lecture (50%), Exercises (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	26	60			
	Seminar					
	Practical Training/ Laboratory					
	Exercises	26	38			
	Excursion					
	Homework					
		52	98		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/ipaz				

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BP 121 - Agricultural Engineering II					**4./6. Sem.;**	**6 CP**
German Module Title	Landtechnik II					
Module Coordinator	Dr. Karl Wettich					
Prerequisites for Participation	Agricultural Engineering I (BK 50)					
Learning Outcomes	The students • can present objectives and process optimizations • can plan and coordinate facilities for the keeping and handling of animals • have knowledge of the legal regulations of animal husbandry • have knowledge of the legal regulations of plant production • have knowledge of appliances and processes.					
Module Content	• aims and tasks of technology in animal and plant production • location and legal issues • process control in animal and plant production • technological measures for quality management and HACCP • application and objectives of Precision Livestock Farming • animal maintenance (feeding techniques and procedures) • physical structures for animal spaces and workplaces (statutory regulations) • technology of milk production and milk storage • disposal (techniques and procedures of manure removal), biological and technical methods of decomposition • specific structural-technical measures in accordance with Integrated Pollution Prevention and Control • facilities for ventilation and air conditioning • application and objectives of precision farming • Tillage systems • Portfolio management (fertilization, plant protection) • Technologies for grassland farming, root crops and cereals • Devices, technical procedures and physical structures for conservation					
Forms of Instruction	Lecture (67%), Exercises (17%), Excursion (17%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	40	40				
Seminar						
Practical Training/ Laboratory						
Exercises	10	20				
Excursion	10					
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written or oral examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or oral examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe			Duration 1 Semester		
Intake capacity	No limit					
Language	German					

BP 122 - Economics of Care and Health Service Management					**3./5. Sem.;**	**6 CP**
German Module Title		Einführung in das Versorgungsmanagement				
Module Coordinator		Prof. Dr. Dietmar Bräunig				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain an overview on the economics of care and health service management • know the methodological and theoretical fundamentals of management science for care and health service companies • are familiar with the performance-related and fiscal functions and special characteristics of care and health service companies • are able to apply the methodological, theoretical and functional knowledge to care and health service companies • understand and can solve management problems of care and health service companies				
Module Content		• Targets and target systems of care and health service companies • performance-related and fiscal functions of care and health service companies • controlling and quality management of care and health service companies • optimization of decisions on the example of care and health service companies • economic parameter and potentials of care and health service management				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/wdh/mpv/				

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BP 123 - Economics and Business Management II	**3. Sem.; 5. Sem.;**	**6 CP**

German Module Title		Volkswirtschaftslehre und Betriebswirtschaftslehre II				
Module Coordinator		Prof. Dr. Roland Herrmann				
Prerequisites for Participation		None				
Learning Outcomes		The students • can apply the contents of Economics and Business Administration I to problem-oriented questions; • are qualified to create problem-solving concepts; • understand advanced important topics of economics and business administration and can apply their deepened knowledge successfully in practical tutorial-based classes.				
Module Content		Economics 2: • tutorial with case studies concerning the topics of Economics I; • introduction to and case studies concerning further economic topics: – factor markets and income distribution; – theory of competition; – basics of economic policy; – economic theory of policy; – international macroeconomic relations. Business Administration II: – production theory; – production functions and models; – cost theory; – cost drivers; – cost and efficiency; – short-term and long-term cost; – planning and controlling. –				
Forms of Instruction		Practical Training (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar					
	Practical Training/ Laboratory	60	90			
	Exercises					
	Excursion					
	Homework					
		60	90	0	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/iam/prof-mae				

BP 126 - Basics of Social Science Research - Methods and Practices in Nutrition, Agricultural and Environmental Sciences	**5./6. Sem.;**	**6 CP**

German Module Title		Grundlagen der sozialwissenschaftlichen Ernährungs-, Agrar- und Umweltforschung				
Module Coordinator		Prof. Dr. Jasmin Godemann				
Prerequisites for Participation		None				
Learning Outcomes		The students • gain professional competences: e.g. fundamental theories, concepts, methods and instruments of social science research, differentiation between quantitative and qualitative methods • achieve methodological and analytical competences: e.g. the competences of scientific work, application of different empirical methods of survey, analysis and evaluation, reflected handling of data and survey results				
Module Content		• Fundamentals of empirical social research • Everyday knowledge, scientific knowledge • Differentiation between qualitative and quantitative social research • Methods and instruments of empirical research • Analysis of quantitative and qualitative data • Presentation and evaluation of survey results • Preparation of an exemplary research project				
Forms of Instruction		Lecture (50%), Seminar (30%), Exercises (20%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	30	30			
	Seminar	18	30			
	Practical Training/ Laboratory					
	Exercises	12				
	Excursion					
	Homework					
		60	60	30	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written assignment (research report) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Research report (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Revision of the written assignment within four weeks or repetition/revision of the examination as defined in b)				
Frequency		WiSe und SuSe		Duration 1 Semester		
Intake capacity		45				
Language		German				
Website		www.uni-giessen.de/fbz/fb09/institute/wdh/kommunikation				

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BP 127 - Introduction to Communication and Media						**3./5. Sem.;**	**6 CP**
German Module Title		Kommunikation und Medien verstehen und gestalten					
Module Coordinator		Prof. Dr. Jasmin Godemann					
Prerequisites for Participation		None					
Learning Outcomes		The students • obtain professional skills: fundamental theories, concepts and instruments of the communication and media sciences, issues and research areas of the subject • achieve methodological and analytical competences: ability to reflect practical experiences on the basis of theories and methods • gain interdisciplinary competences: ability to understand the multidimensional communication phenomenon					
Module Content		• Fundamental terms of the communication and medea science • Interpersonal communication • Media • The public and public relations • Forms of public communication • Research areas of the communication and media sciences • Communication concepts and strategies (campains, social marketing…) • Application examples					
Forms of Instruction		Lecture (50%), Seminar (30%), Exercises (20%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	40				
	Seminar	18	20				
	Practical Training/ Laboratory						
	Exercises	12					
	Excursion						
	Homework						
		60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (100%)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)					
Frequency		WiSe		Duration 1 Semester			
Intake capacity		45					
Language		German					
Website		www.uni-giessen.de/fbz/fb09/institute/wdh/kommunikation					

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BP B 002 - Nutrition and Immunology						**3. Sem.;**	**CP**
German Module Title		Ernährung und Immunologie					
Module Coordinator		Prof. Dr. Clemens Kunz					
Prerequisites for Participation		None					
Learning Outcomes		The students • have fundamental knowledge of the functionality of the immune system • identify different foodstuff or food ingedients, which have an immune protective and an immunomodulating effect • are able to describe the influence of relevant nutritive factors on pathophysiological deseases within the immune system					
Module Content		• Fundamental functional principles of the human innate and adaptive immune system • Development and importance of the immune competent cells in organisms • Differences within the specific (humoral and cellular defence) and natural (Granulozytes, TLR) immunity • Immune regulation and inflammation (acute and chronic) • Presentation of immune cells and immune organs, which are important for nutritional processes (MALT and GALT) • Molecular mechanisms of identification, collection and elimination of pathogenes and the influence of nutrition relevant factors • Significance of the cytokine network in the interaction and communication of immune cells to maintain an intact immune response					
Forms of Instruction		Lecture (50%), Seminar (50%)					
Workload		180 hours					
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
		a) contact hours	b) preparation/ revision			Total	
	Lecture	30	30				
	Seminar	30	30				
	Practical Training/ Laboratory						
	Exercises						
	Excursion						
	Homework						
		60	60	30	30	**180 / CP**	
Module examination	Form(s) of assessment	a) written examination, presentation or b) examination defined by the lecturer (see Special Regulation § 8)					
	Components of final grade	Written examination (50 %), Presentation (50 %)					
	Form of module component retake examination						
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)					
Frequency		WiSe und SuSe		Duration 1 Semester			
Intake capacity		50					
Language		German					
Website		http://www.uni-giessen.de/fbr09/nutrition					

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BP B 012 - Food Toxicology					**6. Sem.;**	**6 CP**
German Module Title		Giftstoffe in Lebensmitteln				
Module Coordinator		Prof. Dr. Uwe Wenzel				
Prerequisites for Participation		Plant-based Food (BK 11), Human Food of Animal Origin (BK 12), Biochemistry I (BK 06)				
Learning Outcomes		The students • gain an overview on the metabolism of foreign substance, detoxification and toxification • have knowledge of pathobiochemistry and food chemistry under consideration of the food toxicology • have fundamental knowledge of analytical methods and procedures in the food analysis				
Module Content		• Knowledge of relevant substance classes of residues, environmental contaminants and their natural toxins, their entry in food products, metabolism and their possible effects and mechanisms of action • Natural and anthropogenic noxins (e.g. mycotoxines, dioxines) in food products • Basics of the analysis of food ingredients, residues and contaminants				
Forms of Instruction		Lecture (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	60	90			
	Seminar					
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	90		30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (100 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/ernaehrungswissenschaft/ag/wenzel				

BP B 068 - Theory of Regional Economics and Regional Policy					**4. Sem.;**	**6 CP**
German Module Title	Raumnutzungstheorie und Regionalpolitik					
Module Coordinator	N.N.					
Prerequisites for Participation	None					
Learning Outcomes	The students • are familiar with the methods to characterize demographic, economic, environmental and agricultural structures • understand the causes and determinants of areal use • comprehend the influence of location factors and the character of regional structures • understand the reasons and implications of changes in agricultural structures and their implications on the environment • oversee the aims of regional policies and can explain them • can evaluate the competences and tasks of supporters of the regional policies • know about the most important instruments and their effects to influence the regional policies					
Module Content	• determinants of regional differences • plain indicators to describe regional structures • significance of agriculture in rural areas • theories to explain the differences of space utilization • interaction of different location factors • integrating and differentiated forces of space utilization • environmental impacts of agriculture and interactions between agriculture and environment • functions of rural spaces • derivation of targets of regional policies • postulated objects of regional and environmental policies • measures and supporters of regional policies • regional development policies and regional policies • regional business policies • integrated development of rural areas					
Forms of Instruction	Lecture (70%), Practical Training (30%)					
Workload	180 hours					
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination		
	a) contact hours	b) preparation/ revision			Total	
Lecture	42	60				
Seminar						
Practical Training/ Laboratory	18					
Exercises						
Excursion						
Homework						
	60	60	30	30	**180 / 6 CP**	
Module examination	Form(s) of assessment	a) written examination, presentation or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (50 %), Presentation (50 %)				
	Form of module component retake examination					
	Form of module retake examination	Written examination or repetition/revision of the examination as defined in b)				
Frequency	SuSe	Duration 1 Semester				
Intake capacity	No limit					
Language	German					
Website	http://www.uni-giessen.de/cms/fbz/fb09/					

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BP B 124 – Everyday Nutrition in the Media					**5. Sem.;**	**6 CP**
German Module Title		Ernährungsalltag in Medien				
Module Coordinator		Prof. Dr. Gunter P. Eckert				
Prerequisites for Participation		None				
Learning Outcomes		The students • are able to identify, analyze the sequences of everday nutrition in different media formats and reflect them critically • can reflect on the impacts of media contents on nutrition and use the knowledge for counselling regarding issues of human nutrition and consumption and can impart consumption competence • can formulate questions relevant to research on the basis of the media data • are able to select, apply and evaluate appropriate methods for available data and a specific research question • are able to produce a thoughtful overall interpretation of the data to analyse				
Module Content		• Methods to analyze pictures, films, texts and other media • Seminar to prepare a project and a guided and supervised practice phase • Explorative investigation of the presentation of nutrition, food and culinary culture in different media formats like films, TV, advertisements, magazines, internet • Project works on specifically selected topics relevant to nutrition • Interdisciplinary networking to exchange research results by presentations, discussion and reflections on the project work				
Forms of Instruction		Seminar (100%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture					
	Seminar	60	15			
	Practical Training/ Laboratory					
	Exercises					
	Excursion					
	Homework					
		60	15	75	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) Portfolio (the portfolio consists of several assignments announced at the beginning of the semester) or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Portfolio (100%)				
	Form of module component retake examination					
	Form of module retake examination	Revision of the portfolio within 4 weeks or repetition/revision of the examination as defined in b)				
Frequency		WiSe		Duration 1 Semester		
Intake capacity		50				
Language		German				
Website		http://www.uni-giessen.de/cms/fbz/fb09/institute/wdh/wpf				

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BP B 125 - Sustainable Food Production					**4./6. Sem.;**	**6 CP**
German Module Title		Nachhaltige Lebensmittelproduktion				
Module Coordinator		Prof. Dr. Gunter P. Eckert				
Prerequisites for Participation		Core modules of the B.Sc. study program				
Learning Outcomes		The students • know the aspects of sustainable food production in different dimensions • are able to connect theoretical requirements to real circumstances • are familiar with the methods of evaluating sustainable food production • can evaluate reporting on sustainability critically • can analyze and evaluate aspects of sustainability on the example of the visited production sites				
Module Content		• Aspects of sustainable food production • Visit of food producing and food processing sites • Discussion of the sustainability concept of the visited factories • Methods and instruments to evaluate sustainability • Criteria and indicators to measure sustainability • Analysis and evaluation of selected companies and their concepts of sustainability • Work on chosen issues from companies regarding the management of sustainability • Case studies				
Forms of Instruction		Lecture (15%), Seminar (35%), Excursion (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	9	10			
	Seminar	21	40			
	Practical Training/ Laboratory					
	Exercises					
	Excursion	30				
	Homework					
		60	50	40	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) Presentation, Project work or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Presentation (50 %), Project work (50 %) (all parts have to be at least sufficient)				
	Form of module component retake examination	Repetition/revision of the failed examination				
	Form of module retake examination	Oral examination				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		30				
Language		German				
Website		http://www.uni-giessen.de/fbr09/nutr-ecol/				

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BP B 129* - Organic Farming Practice – Challenges and Solutions				**4./6. Sem.;**	**6 CP**
German Module Title	Ökologischer Landbau in der Praxis – Herausforderungen und Lösungen				
Module Coordinator	Prof. Dr. Günter Leithold				
Prerequisites for Participation	None (recommended: attendance of BP 034 and BP 006)				
Learning Outcomes	The students • gain insight into current challenges of organic farming and promising and successful solutions while visiting farms • gain deep insight into the practice of organic farming				
Module Content	• Work on various topics to prepare the excursion to farms and productions sites • Structured visits of organic farms with emphasis on defined topics • Discussion with the manager or consultants about the solutions realized on the site regarding the challenge as defined in the topic • Follow-up of the excursion / synthesis				
Forms of Instruction	Seminar (33%), Excursion (67%)				
Workload	180 hours				
	Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
	a) contact hours	b) preparation/ revision			Total
Lecture					
Seminar	20	20			
Practical Training/ Laboratory					
Exercises					
Excursion	40	20			
Homework		20			
	60	60		60	**180 / 6 CP**
Module examination – Form(s) of assessment	a) detailed report/seminar paper about a defined topic or b) examination defined by the lecturer (see Special Regulation § 8)				
Components of final grade	Report/Seminar Paper (100 %)				
Form of module component retake examination					
Form of module retake examination	Revision of the report within 4 weeks or repetition/revision of the examination as defined in b)				
Frequency	SuSe		Duration 1 Semester		
Intake capacity	30				
Language	German (for guest students the guided tour through a farm/production site will be translated into English. Preperation and follow-up may be in English if requested)				
Website	http://www.uni-giessen.de/fbr09/nutr-ecol/				

BP B 130* - Project and Environmental Management	**4./6. Sem.;**	**6 CP**

German Module Title		Projekt- und Umweltmanagement				
Module Coordinator		Study Dean				
Prerequisites for Participation		None				
Learning Outcomes		The students • are familiar with the tasks, systematic strategies and methods of project management • are acquainted with the legal regulations of environmental management tools • have knowledge of the administrative and practical procedures of environmental planning • can analyse and evaluate planning documentation (practical examples) • are familiar with the impacts of practical environmental planning • have an overview of the repercussions environmental planning has on agriculture and rural areas • know the limits of and approaches for improving planning tools				
Module Content		a) Project management • fundamentals of project management • methods of practical project management • practical examples in project management (case studies) b) Practical environmental planning (respectively: legal fundamentals, responsibilities, procedures, evaluations, relevance and repercussions on agriculture, practical experience with the use of case studies, criticism and improvements): • environmental impact assessment • Strategic Environmental Assessment (SEA) • impact regulation • operational environmental policy • environmental audit • environmental management standards ISO 14001 and 14004 • local agenda • environmental aspects in regional and landscape plans • selected planning areas (e.g. rural development, -structural development and environmental impact in agriculture, waste planning, traffic planning, land consumption planning, water planning) c) Interrelation of environmental planning and management systems with economic incentive systems				
Forms of Instruction		Lecture (15%), Practical Training (50%)				
Workload		180 hours				
		Consisting of: A) courses in total		B) autonomous work in the module	C) module examination	
		a) contact hours	b) preparation/ revision			Total
	Lecture	9	10			
	Seminar	21	40			
	Practical Training/ Laboratory					
	Exercises					
	Excursion	30				
	Homework					
		60	50	40	30	**180 / 6 CP**
Module examination	Form(s) of assessment	a) written examination, reports or b) examination defined by the lecturer (see Special Regulation § 8)				
	Components of final grade	Written examination (60 %), Reports (40 %)				
	Form of module component retake examination					
	Form of module retake examination	Oral examination or repetition/revision of the examination as defined in b)				
Frequency		SuSe		Duration 1 Semester		
Intake capacity		No limit				
Language		German				
Website		http://www.uni-giessen.de/fbr09/nutr-ecol/				