Julius-Maximilians-
UNIVERSITÄT
WÜRZBURG

Subdivided Module Catalogue

for the Subject

Food Chemistry

as a Bachelor's with 1 major

with the degree "Bachelor of Science"

(180 ECTS credits)

Examination regulations version: 2009
Responsible: Faculty of Chemistry and Pharmacy

Course of Studies - Contents and Objectives

No translation available.

Abbreviations used

Course types: **E** = field trip, **K** = colloquium, **O** = conversatorium, **P** = placement/lab course, **R** = project, **S** = seminar, **T** = tutorial, **Ü** = exercise, **V** = lecture

Term: **SS** = summer semester, **WS** = winter semester

Methods of grading: **NUM** = numerical grade, **B/NB** = (not) successfully completed

Regulations: **(L)ASPO** = general academic and examination regulations (for teaching-degree programmes), **FSB** = subject-specific provisions, **SFB** = list of modules

Other: **A** = thesis, **LV** = course(s), **PL** = assessment(s), **TN** = participants, **VL** = prerequisite(s)

Conventions

Unless otherwise stated, courses and assessments will be held in German, assessments will be offered every semester and modules are not creditable for bonus.

Notes

Should there be the option to choose between several methods of assessment, the lecturer will agree with the module coordinator on the method of assessment to be used in the current semester by two weeks after the start of the course at the latest and will communicate this in the customary manner.

Should the module comprise more than one graded assessment, all assessments will be equally weighted, unless otherwise stated below.

Should the assessment comprise several individual assessments, successful completion of the module will require successful completion of all individual assessments.

In accordance with

the general regulations governing the degree subject described in this module catalogue:

ASPO2009

associated official publications (FSB (subject-specific provisions)/SFB (list of modules)):

22-Jul-2010 (2010-49)

This module handbook seeks to render, as accurately as possible, the data that is of statutory relevance according to the examination regulations of the degree subject. However, only the FSB (subject-specific provisions) and SFB (list of modules) in their officially published versions shall be legally binding. In the case of doubt, the provisions on, in particular, module assessments specified in the FSB/SFB shall prevail.

The subject is divided into

Abbreviation	Module title	ECTS credits	Method of grading	page
Compulsory Courses (150 ECTS credits)				
10-M-MCB-101-m01	Mathematics for students in Chemistry and Biology	5	NUM	27
07-LMC-BIO1-092-m01	General Biology of Economic Plants from Food and Forage	7	NUM	7
08-LMC-AC1-092-m01	General and Inorganic Chemistry for Food Chemistry Students	14	NUM	11
11-EFNF-072-m01	Introduction to Physics for Students of Non-physics-related Minor Subjects	7	NUM	29
11-PFNF-072-m01	Practical Course Physics for Students of Non-physics-related Minor Subjects	3	B/NB	31
08-PC-Bio-072-m01	Physical Chemistry for Biology Majors	5	NUM	26
08-LMC-AC2-092-m01	Quantitative Inorganic Chemistry for Food Chemistry Students	5	NUM	12
08-LMC-AC3-092-m01	Quantitative Inorganic Analysis for Food Chemistry Students	14	NUM	13
03-TR-072-m01	Toxicology and legal studies	3	NUM	6
08-LMC-BC-092-m01	Biochemistry for Food Chemistry Students	6	NUM	14
08-LMC-IA-092-m01	Introduction to Instrumental Analysis for Food Chemistry Students	5	NUM	17
08-LMC-LMA-092-m01	Instrumental Analysis for Food Chemistry Students	12	NUM	18
08-LMC-LMC0-092-m01	Introduction to Food Chemistry	5	NUM	19
08-LMC-LMC1-092-m01	Food chemistry 1	17	NUM	20
08-LMC-LMC2-092-m01	Food chemistry 2	12	NUM	21
08-LMC-OC0-092-m01	Organic Chemistry 0 (Nomenclature and Stereochemistry) for Food Chemistry Students	5	NUM	23
08-LMC-OC1-092-m01	Organic Chemistry for Food Chemistry Students	5	NUM	24
08-LMC-OC2-092-m01	Practical Course in Organic Chemistry for Food Chemistry Students	10	B/NB	25
07-LMC-BIO2-092-m01	Microbiology for Food Chemistry students	5	B/NB	9
03-LMC-HYG-092-m01	Microbiology of Food and Hygiene for Food Chemistry Students	5	NUM	5
Thesis (10 ECTS credits)				
08-LMC/BA-092-m01	Bachelor Thesis	10	NUM	10
Subject-specific Key Skills (15 ECTS credits)				
08-LMC-FSQ1-092-m01	Analysis Strategies	5	B/NB	15
08-LMC-FSQ2-092-m01	Quality management	5	NUM	16
08-LMC-MBA-092-m01	Introduction to Molecular Biological Analysis for Food Chemistry Students	5	NUM	22

Module title			Abbreviation
Microbiology of Food and Hygiene for Food Chemistry Students			03-LMC-HYG-092-m01
Module coordinator		**Module offered by**	
Institute of Hygiene and Microbiology		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The students will gain knowledge on food-related topics of hygiene and microbiology. This includes relevant, food-contaminating microorganisms and the infections/diseases they provoke; antimicrobial drugs/substances; hygiene management, food decay.

Intended learning outcomes

Students gain knowledge on food microbiology and hygiene: fundamentals of microbial systematics, morphology, cytology and physiology; knowledge on the role of pathogens (microorganisms, toxin producers, viruses, prions, parasites) for food chemistry and food technology (decay, intoxications, analytical microbiology, biotechnology); knowledge on the diagnosis and cultivation of microorganisms; knowledge on microbial inactivation (disinfection, sterilisation); fundamentals of the pathogenesis of important human pathogens and clinical consequences of microbial infection; fundamentals of medically relevant antiinfectives and the development of drug resistances.

Courses (type, number of weekly contact hours, language — if other than German)

V + P (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Toxicology and legal studies			03-TR-072-m01
Module coordinator		**Module offered by**	
lecturer of lecture "Toxikologie und Rechtskunde"		Faculty of Medicine	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Basics of legal regulations for chemists (handling and transportation of hazardous materials), fundamentals of toxicology.

Intended learning outcomes

The students master the basics of legal regulations for chemists (handling and transport of hazardous substances) as well as the fundamentals of toxicology.

Courses (type, number of weekly contact hours, language — if other than German)

V + V (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 90 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)
Bachelor' degree (1 major) Biochemistry (2013)
Bachelor' degree (1 major) Biochemistry (2009)
Bachelor' degree (1 major) Chemistry (2007)
Bachelor' degree (1 major) Chemistry (2008)
Bachelor' degree (1 major) Chemistry (2010)
Bachelor' degree (1 major) Chemistry (2009)
Bachelor' degree (1 major) Food Chemistry (2009)
Bachelor' degree (1 major) FOKUS Chemistry (2011)
Master's degree (1 major) Chemistry (2013)
Master's degree (1 major) Chemistry (2010)
Master's degree (1 major) Chemistry (2014)
First state examination for the teaching degree Grundschule Chemistry (2009)
First state examination for the teaching degree Hauptschule Chemistry (2009)
First state examination for the teaching degree Realschule Chemistry (2009)
First state examination for the teaching degree Gymnasium Chemistry (2009)
First state examination for the teaching degree Mittelschule Chemistry (2013)

Module title			Abbreviation
General Biology of Economic Plants from Food and Forage			07-LMC-BIO1-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Plant Physiology and Biophysics		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
7	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The first part of the winter semester course will discuss the plant cell, the smallest unit of the plant organism, starting with its macroscopic structure before moving on to its microscopic structure. The course will point out differences and similarities between prokaryotic cells (bacteria, archaebacteria) and eukaryotic cells (animals, plants). In the second part of the winter semester course, students will acquire the fundamental knowledge necessary to understand the form (anatomy, morphology and cytology) and function of plant organisms. The summer semester course will introduce students to the fundamental principles of botany, using the example of food and fodder crops. Taking into account their taxonomy, morphology and cytology, the course will discuss physiological and genetic aspects of selected crops and their compounds as well as aspects related to the breeding of these crops. In this context, the course will point out differences that may be used, for example, for the microscopic identification of a variety of food and fodder crops.

Intended learning outcomes

In the winter semester, students have acquired a knowledge of the structure of plant cells and their (biological) macromolecules as well as of the specific characteristics of the intracellular and extracellular structures of plant cells. In the summer semester, students have acquired the following knowledge and skills: - Fundamental knowledge of the distinguishing characteristics, genetics and physiology of representatives of the plant kingdom with special attention to crops. - Fundamental knowledge of major anatomical and morphological plant traits as well as of the compounds of food and fodder crops. - Fundamental knowledge of the components and functioning of microscopes. - Fundamental preparation skills. - Basic familiarity with methods for the microscopic examination of crops. - Fundamental skills in the interpretation of macroscopic and histologic plant preparations by light microscopy.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 07-LMC-BIO1-1-092: V + V (no information on SWS (weekly contact hours) and course language available)
- 07-LMC-BIO1-2-092: V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 07-LMC-BIO1-1-092: From the Plant Cell to the Plant Organism From the Plant Cell to the Plant Organism

- 2 ECTS, Method of grading: numerical grade
- written examination (approx. 60 minutes)

Assessment in module component 07-LMC-BIO1-2-092: General Biology and Microscopy of Economic Plants, and Microscopic Analysis of Food and Forage General Biology and Microscopy of Economic Plants, and Microscopic Analysis of Food and Forage

- 5 ECTS, Method of grading: numerical grade
- practical examination (approx. 2 to 3 hours, ungraded) and written examination (approx. 60 minutes)

Allocation of places

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Additional information
Additional information will be listed separately for each module component. • 07-LMC-BIO1-2-092: -- • 07-LMC-BIO1-1-092: Will include 3 teaching units on photosynthesis.
Workload
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Teaching cycle
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Microbiology for Food Chemistry students			07-LMC-BIO2-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Microbiology		Faculty of Biology	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Fundamental principles of the systematics, morphology and metabolic physiology of microorganisms (bacteria, viruses, fungi, mycoplasmas, chlamydia, Rickettsia).

Intended learning outcomes

Sterile techniques, bacterial culture, physiological and microscopic techniques for the detection, identification and differentiation of microorganisms.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

log (approx. 30 pages)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Bachelor Thesis			08-LMC/BA-092-m01
Module coordinator			**Module offered by**
degree programme coordinator Lebensmittelchemie (Food Chemistry)			Institute of Pharmacy and Food Chemistry
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

This module gives students the opportunity to research and write on a defined problem within a given time frame and using the scientific methods they have learned during the programme.

Intended learning outcomes

Students are able to conduct research on a defined problem/topic, adhering to the principles of good scientific practice, and to present the results of their work in written form.

Courses (type, number of weekly contact hours, language — if other than German)

(no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written thesis (approx. 20 to 30 pages)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
General and Inorganic Chemistry for Food Chemistry Students			08-LMC-AC1-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
14	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Essential concepts and basic laws; nomenclature, atoms and the periodic table of elements; types of chemical bonds, intramolecular forces, solutions and heterogeneous systems; fundamental principles of thermodynamics and chemical kinetics; chemical equilibrium; the law of mass action; acid-base systems and redox systems; chemical equations and stoichiometry, chemical behaviour of reactants (elements and categories of substances) as well as their qualitative inorganic analysis with a special focus on elements commonly found in foods that may pose environmental or toxicological risks.

Intended learning outcomes

Safe and hygienic laboratory practices. Qualitative analysis of inorganic ions and ion mixtures in drinking water.

Courses (type, number of weekly contact hours, language — if other than German)

V + P + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 120 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Quantitative Inorganic Chemistry for Food Chemistry Students			08-LMC-AC2-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Chemical equations and stoichiometry, chemical behaviour of reactants (elements and categories of substances) as well as their quantitative inorganic analysis with a special focus on elements commonly found in foods that may pose environmental or toxicological risks.

Intended learning outcomes

Ability to apply different methods of analysis, work in a laboratory with a high degree of accuracy and interpret results. In the Quantitative Inorganic Analysis module (Quantitative Anorganische Analyse), students will use different methods of analysis to quantify inorganic ions and will interpret the quality and relevance of the results obtained. In addition, they will select appropriate methods for the analysis of an unknown water sample, perform that analysis competently, assess the accuracy of the results obtained and discuss them in reference to the nature of the water sample.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (120 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Quantitative Inorganic Analysis for Food Chemistry Students			08-LMC-AC3-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
14	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Chemical equations and stoichiometry, chemical behaviour of reactants (elements and categories of substances) as well as their quantitative inorganic analysis with a special focus on elements commonly found in drinking and process water that can be used to determine the provenance of samples and that may pose environmental or toxicological risks.

Intended learning outcomes

Students will independently search literature for the inorganic constituents of different drinking and process waters and will deliver a presentation on the results of their work. They will select appropriate methods, analyse different water samples, verify the accuracy of the results obtained and interpret them on the basis of relevant data.

Courses (type, number of weekly contact hours, language — if other than German)

P + S + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

oral examinations of one candidate each during lab course (approx. 15 minutes), talk (approx. 20 minutes), proof of correctness and reproducibility of analyses including documentation in lab notebook in the form of logs of analyses (approx. 8 pages per analysis, approx. 80 pages total)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Biochemistry for Food Chemistry Students			08-LMC-BC-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
6	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
2 semester	undergraduate	--	

Contents

The structure and function of macromolecules; fundamental principles of the biosynthesis and metabolism of food constituents; energy generation; biological oxidation; enzymes and biocatalysis. Replication, transcription, translation, general control mechanisms.

Intended learning outcomes

Students have become familiar with the fundamental principles of biochemistry including the structure of the cell and all functions and the synthesis of all cellular compartments and constituents.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü + V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 120 minutes) or oral examination (approx. 30 minutes)

Allocation of places

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Additional information

Will include a total of 15 teaching units on the generation of energy, biological oxidation, enzymes and biocatalysis.

Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Analysis Strategies			08-LMC-FSQ1-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

The occupation of a food chemist. General strategies for qualitative and quantitative analyses. Calibration strategies. Accuracy and quality of chemical analyses. Interpretation of measured data with statistical methods.

Intended learning outcomes

Students have learned how to plan, perform and evaluate analyses, use statistical methods to interpret the data obtained and validate their results.

Courses (type, number of weekly contact hours, language — if other than German)

R + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

project report (approx. 15 pages)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Quality management			08-LMC-FSQ2-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	08-LMC-IA	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Quality assurance in the lab.

Intended learning outcomes

Students are able to apply the fundamental principles of industrial quality assurance as well as to independently write and apply standard operating procedures.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

term paper (approx. 10 pages) with presentation (approx. 15 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Introduction to Instrumental Analysis for Food Chemistry Students			08-LMC-IA-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Analysis of organic molecules; physical separation techniques and measurement methods.

Intended learning outcomes

Students have learned the principles of spectroscopy, chromatography and electrochemistry. They have become familiar with typical fields of application of those methods as well as with the necessary detectors. They know how to analyse spectra and chromatograms mathematically and statistically and how to interpret them.

Courses (type, number of weekly contact hours, language — if other than German)

V (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 120 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Instrumental Analysis for Food Chemistry Students			08-LMC-LMA-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
12	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Fundamental principles of the analysis of foods, tobacco products, cosmetics, consumer goods and feeds; in particular spectroscopic and chromatographic methods.

Intended learning outcomes

Students have developed the ability to plan and perform qualitative and quantitative analyses of foods using spectroscopic (photometry, fluorimetry) and chromatographic (thin-layer chromatography, high performance liquid chromatography, gas chromatography) methods.

Courses (type, number of weekly contact hours, language — if other than German)

P + V + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

oral examinations of one candidate each during lab course (approx. 15 minutes), completion of written theoretical assignments (2 assignments, 180 minutes each), completion of practical assignments as specified by the lecturer including documentation in lab notebook in the form of logs of analyses (approx. 12 pages per assignment, approx. 72 pages total)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			**Abbreviation**
Introduction to Food Chemistry			08-LMC-LMCo-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents
Introduction to the chemistry of food constituents.
Intended learning outcomes
Students are familiar with the fundamental structures, properties and reactions of proteins, carbohydrates and lipids as well as their importance in foods.
Courses (type, number of weekly contact hours, language — if other than German)
V + S (no information on SWS (weekly contact hours) and course language available)
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)
written examination (approx. 120 minutes)
Allocation of places
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Additional information
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Workload
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Teaching cycle
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Referred to in LPO I (examination regulations for teaching-degree programmes)
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Module appears in
Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Food chemistry 1			08-LMC-LMC1-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
17	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Knowledge of the fundamental principles of the chemistry of food constituents and methods for the analysis of foods, tobacco products and feeds including the interpretation of measured data with statistical methods. A particular focus will be on foods and feeds that contain carbohydrates.

Intended learning outcomes

Students have developed a knowledge of the composition and chemical constituents as well as of the analysis of foods that contain carbohydrates. They are able to write a report about a food that contains carbohydrates, drawing on their knowledge about food law and the composition of that food. Students are able to prepare and deliver a presentation on a related topic.

Courses (type, number of weekly contact hours, language — if other than German)

V + S + P + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

talk (approx. 45 minutes), oral examinations of one candidate each during lab course (approx. 15 minutes), proof of correctness and reproducibility of analyses including documentation in lab notebook in the form of logs of analyses (approx. 6 pages per analysis, approx. 60 pages total), summary product analysis (approx. 15 to 20 pages)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Food chemistry 2			08-LMC-LMC2-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
12	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Knowledge of the fundamental principles of the chemistry of food constituents and methods for the analysis of foods, tobacco products and feeds including the interpretation of measured data with statistical methods. A particular focus will be on foods and feeds that contain lipids.

Intended learning outcomes

Students have developed a knowledge of the composition and chemical constituents as well as of the analysis of foods that contain lipids and proteins. They are able to write a report about a food that contains lipids and proteins, drawing on their knowledge about food law and the composition of that food. Students are able to prepare and deliver a presentation on a related topic.

Courses (type, number of weekly contact hours, language — if other than German)

S + V + P + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

talk (approx. 45 minutes), oral examinations of one candidate each during lab course (approx. 15 minutes), proof of correctness and reproducibility of analyses including documentation in lab notebook in the form of logs of analyses (approx. 6 pages per analysis, approx. 60 pages total), summary product analysis (approx. 15 to 20 pages)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Introduction to Molecular Biological Analysis for Food Chemistry Students			08-LMC-MBA-092-m01
Module coordinator			**Module offered by**
holder of the Chair of Food Chemistry			Institute of Pharmacy and Food Chemistry
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	08-LMC-IA, 08-LMC-LMA, 08-LMC-LMo, lab course of module 08-LMC-LMC2	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Theoretical and practical principles of methods in molecular biology.

Intended learning outcomes

Students are able to perform essential molecular biological techniques for DNA isolation, polymerase chain reaction, agarose gel electrophoresis and restriction enzyme digestion. They can interpret molecular biological data independently.

Courses (type, number of weekly contact hours, language — if other than German)

S + P (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

completion of written theoretical assignments (4 to 5 assignments, 30 minutes each), completion of practical assignments as specified by the lecturer including documentation in lab notebook in the form of logs of analyses (approx. 20 pages total)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Organic Chemistry o (Nomenclature and Stereochemistry) for Food Chemistry Students			08-LMC-OCo-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Medicinal and Pharmaceutical Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	08-LMC-AC2 and 08-LMC-AC3	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Stereochemistry and nomenclature of the most important bonding classes , in particular that of naturally occurring substances.

Intended learning outcomes

Students have learned the IUPAC rules for naming organic compounds. They have become familiar with the trivial names of compounds and know how to translate the name of a compound into its structural formula. They grasp key concepts and the significance of stereochemistry and have learned rules for naming stereochemical compounds.

Courses (type, number of weekly contact hours, language — if other than German)

S + Ü + S (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 60 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Organic Chemistry for Food Chemistry Students			08-LMC-OC1-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Medicinal and Pharmaceutical Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	08-LMC-AC2 and 08-LMC-AC3	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Fundamental principles, e.g. nomenclature, types of chemical bonds; sum formulas, structural formulas; reaction types and mechanisms; chemical characteristics; chemical behaviour of reactants (important bonding classes and, in particular, naturally occurring substances); chemistry of functional groups and categories of substances; structure and reactivity; fundamental principles of synthetic and biopolymers.

Intended learning outcomes

Students understand fundamental reaction mechanisms and are able to predict the behaviour and properties of chemical compounds on the basis of their functional groups.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 120 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Practical Course in Organic Chemistry for Food Chemistry Students			08-LMC-OC2-092-m01
Module coordinator		**Module offered by**	
holder of the Chair of Food Chemistry		Institute of Pharmacy and Food Chemistry	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
10	(not) successfully completed	08-LMC-AC2 and 08-LMC-AC3	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Fundamental principles, e.g. nomenclature, types of chemical bonds; sum formulas, structural formulas; reaction types and mechanisms; chemical characteristics; chemical behaviour of reactants (important bonding classes and, in particular, naturally occurring substances); chemistry of functional groups and categories of substances; structure and reactivity; fundamental principles of synthetic and biopolymers.

Intended learning outcomes

Students are able to perform syntheses of different categories of substances using essential techniques as well as to determine the identity and purity of the products.

Courses (type, number of weekly contact hours, language — if other than German)

P (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

oral examinations (approx. 15 minutes each) and logs (approx. 65 pages)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Food Chemistry (2009)

Module title	Abbreviation
Physical Chemistry for Biology Majors	08-PC-Bio-072-m01

Module coordinator	Module offered by
lecturer of lecture "Thermodynamik, Kinetik, Elektrochemie für Studierende der Biologie and Lebensmittelchemie"	Institute of Physical and Theoretical Chemistry

ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--

Duration	Module level	Other prerequisites
1 semester	undergraduate	--

Contents

This module discusses the fundamental principles of thermodynamics, kinetics and electrochemistry.

Intended learning outcomes

Students have become familiar with the fundamental principles of thermodynamics, kinetics and electrochemistry. They are able to understand and explain fundamental processes in nature and engineering.

Courses (type, number of weekly contact hours, language — if other than German)

This module comprises 2 module components. Information on courses will be listed separately for each module component.

- 08-PC-Bio-1-062: V + Ü (no information on SWS (weekly contact hours) and course language available)
- 08-PC-Bio-2-072: P (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

Assessment in this module comprises the assessments in the individual module components as specified below. Unless stated otherwise, successful completion of the module will require successful completion of all individual assessments.

Assessment in module component 08-PC-Bio-1-062: Thermodynamics, Kinetics, Electrochemistry (lecture) Thermodynamics, Kinetics, Electrochemistry (lecture)

- 4 ECTS, Method of grading: numerical grade
- written examination (60 minutes)

Assessment in module component 08-PC-Bio-2-072: Physical Chemistry (lecture and lab)

- 1 ECTS, Method of grading: (not) successfully completed
- Vortestate (pre-experiment exams, approx. 15 minutes each), assessment of practical performance (log approx. 5 to 10 pages), Nachtestate (post-experiment exams, approx. 15 minutes each)
- Assessment offered: once a year, winter semester

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Biology (2007)
Bachelor' degree (1 major) Food Chemistry (2009)

Module title			Abbreviation
Mathematics for students in Chemistry and Biology			10-M-MCB-101-m01
Module coordinator		**Module offered by**	
Dean of Studies Mathematik (Mathematics)		Institute of Mathematics	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
5	numerical grade	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	Registration for the exercise must be made via SB@home at the beginning of the course or as announced by the lecturer in accordance with the specified registration deadlines. Certain prerequisites must be met to qualify for admission to assessment (e. g. successful completion of a certain percentage of exercises). The lecturer will inform students about the respective details at the beginning of the course. Registration for the exercise will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew and have to register anew, too.	

Contents

Functional relations, differentiation and integration of functions in one variable, curve sketching, differentiation of functions in several variables, power series, ordinary differential equations, systems of linear equations, basic notions in statistics.

Intended learning outcomes

The student is able to recognise and phrase simple questions from natural sciences as mathematical problems, apply basic mathematical methods to them and interpret the results.

Courses (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 90 to 120 minutes)

Allocation of places

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Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)
Bachelor' degree (1 major) Biochemistry (2009)

Bachelor' degree (1 major) Biology (2011)
Bachelor' degree (1 major) Biology (2010)
Bachelor' degree (1 major) Chemistry (2010)
Bachelor' degree (1 major) Food Chemistry (2009)
Bachelor' degree (1 major) FOKUS Chemistry (2011)
No final examination Special study offering (2010)

Module title			Abbreviation
Introduction to Physics for Students of Non-physics-related Minor Subjects			11-EFNF-072-m01

Module coordinator	Module offered by
Managing Director of the Institute of Applied Physics	Faculty of Physics and Astronomy

ECTS	Method of grading	Only after succ. compl. of module(s)
7	numerical grade	--

Duration	Module level	Other prerequisites
2 semester	undergraduate	--

Contents

Mechanics, vibration theory, thermodynamics, optics, science of electricity, Atomic and Nuclear Physics.

Intended learning outcomes

The students have knowledge of the principles of Physics.

Courses (type, number of weekly contact hours, language — if other than German)

V + V (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

written examination (approx. 120 minutes)

Allocation of places

Only as part of pool of general key skills (ASQ): 10 places. Places will be allocated by lot.

Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)
Bachelor' degree (1 major) Biochemistry (2013)
Bachelor' degree (1 major) Biochemistry (2009)
Bachelor' degree (1 major) Biology (2011)
Bachelor' degree (1 major) Biology (2007)
Bachelor' degree (1 major) Biology (2010)
Bachelor' degree (1 major) Chemistry (2007)
Bachelor' degree (1 major) Chemistry (2008)
Bachelor' degree (1 major) Chemistry (2010)
Bachelor' degree (1 major) Chemistry (2009)
Bachelor' degree (1 major) Geography (2007)
Bachelor' degree (1 major) Geography (2008)
Bachelor' degree (1 major) Geography (2010)
Bachelor' degree (1 major) Computer Science (2007)
Bachelor' degree (1 major) Computer Science (2014)
Bachelor' degree (1 major) Computer Science (2010)
Bachelor' degree (1 major) Food Chemistry (2009)
Bachelor' degree (1 major) Mathematics (2008)
Bachelor' degree (1 major) Mathematics (2014)

Bachelor' degree (1 major) Mathematics (2012)
Bachelor' degree (1 major) Mathematics (2013)
Bachelor' degree (1 major) Mathematics (2007)
Bachelor' degree (1 major) Biomedicine (2009)
Bachelor' degree (1 major) Biomedicine (2013)
Bachelor' degree (1 major) Computational Mathematics (2009)
Bachelor' degree (1 major) Computational Mathematics (2014)
Bachelor' degree (1 major) Computational Mathematics (2012)
Bachelor' degree (1 major) Computational Mathematics (2013)
Bachelor' degree (1 major) FOKUS Chemistry (2011)

Module title			Abbreviation
Practical Course Physics for Students of Non-physics-related Minor Subjects			11-PFNF-072-m01
Module coordinator		**Module offered by**	
Managing Director of the Institute of Applied Physics		Faculty of Physics and Astronomy	
ECTS	**Method of grading**	**Only after succ. compl. of module(s)**	
3	(not) successfully completed	--	
Duration	**Module level**	**Other prerequisites**	
1 semester	undergraduate	--	

Contents

Mechanics, vibration theory, thermodynamics, optics, X-rays, nuclear magnetic resonance, Atomic and Nuclear Physics.

Intended learning outcomes

The students have knowledge of the principles of Physics.

Courses (type, number of weekly contact hours, language — if other than German)

P (no information on SWS (weekly contact hours) and course language available)

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module can be chosen to earn a bonus)

a) oral test (approx. 15 minutes) during experiment and b) ungraded written examination (approx. 90 minutes)

Allocation of places

Only as part of pool of general key skills (ASQ): 10 places. Places will be allocated by lot.

Additional information

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Workload

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Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor' degree (1 major) Biochemistry (2011)
Bachelor' degree (1 major) Biochemistry (2013)
Bachelor' degree (1 major) Biochemistry (2009)
Bachelor' degree (1 major) Biology (2011)
Bachelor' degree (1 major) Biology (2007)
Bachelor' degree (1 major) Biology (2010)
Bachelor' degree (1 major) Chemistry (2007)
Bachelor' degree (1 major) Chemistry (2008)
Bachelor' degree (1 major) Chemistry (2010)
Bachelor' degree (1 major) Chemistry (2009)
Bachelor' degree (1 major) Geography (2007)
Bachelor' degree (1 major) Geography (2008)
Bachelor' degree (1 major) Geography (2010)
Bachelor' degree (1 major) Computer Science (2007)
Bachelor' degree (1 major) Computer Science (2014)
Bachelor' degree (1 major) Computer Science (2010)
Bachelor' degree (1 major) Food Chemistry (2009)
Bachelor' degree (1 major) Biomedicine (2009)

Bachelor' degree (1 major) Biomedicine (2013)
Bachelor' degree (1 major) FOKUS Chemistry (2011)