



Module directory

Applied Biotechnology and Food Science

Flensburg University of Applied Sciences

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1. Formal criteria of the degree programme.....	4
1.1 Structure and duration of the degree programme.....	4
1.2 Profile of the degree programme.....	4
1.3 Admission requirements.....	4
1.4 Degrees and titles	4
1.5 Modularisation.....	4
1.6 Credit Point System	5
2. Subject and content-related criteria of the degree programme	6
2.1 Intended learning outcomes and degree level.....	6
2.2 Concept of the degree programme.....	9
2.3 Mobility.....	11
2.4 Assessment & exams	11
2.5 Equal opportunities, compensation of disadvantages.....	13
3. Module overview.....	15
Industrial Food Processing.....	15
Food Innovations	17
Production Organisms.....	19
Bioanalytical Techniques.....	22
Elective Courses 1	24
Research Proposal	26
Scientific Conference.....	29
Team Project	31
Elective Course 2.....	33
Quality Management.....	35
Advanced Bioprocess Engineering.....	37
Food Protection.....	39
Leading and Presenting in Teams.....	41
German as a foreign language GER A1	44
German as a foreign language GER A2/B1.....	46

Master's thesis	48
Explanations and abbreviations used in the module descriptions.....	50
Type of class	50
Type of grading.....	50

1. Formal criteria of the degree programme

1.1 Structure and duration of the degree programme

The degree programme *Applied Biotechnology and Food Science* is part of a 10 semester, consecutive degree programme made up of these two degree programmes:

- Bachelor's degree programme *Biotechnology and Food Technology* (seven semesters)
- Master's degree programme *Applied Biotechnology and Food Science* (three semesters)

The period of time designated to complete the master's degree programme is three semesters.

Students are expected to acquire 30 ECTS per semester, i.e. 90 ECTS in total. The module directory specifies how the ECTS are distributed per semester.

1.2 Profile of the degree programme

The degree programme has an application-oriented focus. To complete this programme, students are expected to produce a thesis on a research question applying academic methods.

1.3 Admission requirements

In order to be admitted to the programme, applicants must have completed a bachelor's degree in biotechnology and/or food technology or a related subject comprised of 210 CP with a minimum grade average of 2.5. Applicants must also have English language skills at B2 level. Details on admission requirements are specified in the Study and Examination Regulations.

1.4 Degrees and titles

Upon completion of the programme, graduates are awarded the degree Master of Science (M.Sc.).

As part of the degree certificate, Flensburg University of Applied Sciences (FUAS) issues a diploma supplement in the version valid and agreed upon by the Standing Conference of the Ministers of Education and Cultural Affairs and the German Rectors' Conference respectively.

1.5 Modularisation

This is a consecutive degree programme. The modules are limited to one semester, both in terms of their content and the time planned for them. The member of teaching staff in charge of a module will provide a module description. All of these module descriptions can be found in the

module directory. The module description includes the following information: degree programme, module name and abbreviation, faculty, short description, hours per week (in class), Credit Points, workload, module type, acquisition of transferrable qualifications and skills, allocation within the curriculum and whether the module is taught in the summer or winter semester, pre-requisites (contents and formal), language of instruction, type and mode of assessment, examination language, contact person for the module, intended learning outcome and skills and competencies, contents, study and teaching form, recommended reading, equipment and costs.

1.6 Credit Point System

The ECTS credit point systems is applied for assessment in this degree programme. Altogether, 90 CP can be acquired in this degree programme. They are distributed evenly, i.e. 30 CP per semester of the programme.

A fixed conversion key is used for the distribution of credit points. Following this, 6 CP make up a workload of 180 hours per semester. These 180 hours are made up of 60 hours per week (hpw) in class and 120 hours of revision outside class, with one semester being made up of 15 weeks. Thus, the total workload per semester is 900 hours.

The workload designated for the master's thesis, including the colloquium, is 30 CP (i.e. 900 hours).

2. Subject and content-related criteria of the degree programme

2.1 Intended learning outcomes and degree level

The objectives of studies for this degree programme are specified under §2 of the Study and Examination Regulations.

The master's degree programme aims to provide students with the knowledge and skills necessary to identify and analyse problems related to the subject of biotechnology and food technology, to develop individual solutions that are both academically and technically sound and to successfully turn these solutions into marketable products and services.

These objectives are met through the teaching of in-depth special knowledge in biotechnology and food technology. In the course of the studies, students then apply the knowledge they have acquired to research questions and in application-oriented projects. Thus, students train subject-related as well as transferrable qualifications and skills. These transferrable skills include independently structuring questions and problems, selecting and applying suitable methods and cooperating and working in a team towards a joint objective.

In their thesis, at the end of the programme, students repeatedly work on research projects supported and supervised by members of teaching staff. Thus, they further improve their ability to work on problems and questions new to them in a systematic and methodological manner and to find science-based solutions.

The intended learning outcome of this master's degree programme can be divided into three categories:

- Subject-specific qualifications and skills
- Personal skills
- General qualifications and skills

A general aim of this programme is to equip students with a strong ability to analyse and solve problems in the subject-specific scope of the programme. Thorough knowledge of the subject and the ability to connect different spheres of knowledge are a pre-requisite to achieving this aim as well as training to act in a target-oriented manner and acquire further knowledge independently, i.e. life-long learning.

The matrix of intended learning outcomes below connects the programme's modules and their contents with the various relevant qualifications and skills that – when combined – will enable success in a professional context.

Table 1: Matrix: Intended learning outcomes, Applied Biotechnology and Food Science

Classification of the intended learning outcome and results in the master's degree programme	Bioanalytical Techniques	Production Organisms	Industrial Food Processing	Food Innovations	Elective course 1 and 2	Research Proposal	Team Project	Scientific Conference	Master's thesis
Subject-specific qualifications									
Acquisition of further knowledge in technology and natural sciences as well as new subjects	x	x	x	x			x		x
Methodology					x		x		x
Data analysis and interpretation	x	x					x		x
Academic Research and Writing Techniques						x	x	x	x
Legal basics	x	x	x	x	x				
Personal skills									
Self and project management				x		x	x	x	x
Ability to work independently							x	x	x
Communication and presentation skills			x	x		x	x	x	x
Taking on responsibility							x	x	x
Intercultural competence						x	x	x	
Language skills	x	x	x	x	x	x	x	x	x
General qualifications and skills									
Problem solving skills							x		x
Ability and willingness for life-long learning							x		x
Evaluating social, ecological and economic consequences	x	x	x	x					
Acting in a target-oriented and successful manner							x		x
Ability for abstract thinking	x	x	x	x		x	x	x	x
Ability to think and work across subject areas	x	x	x	x		x	x		x
Leadership skills							x	x	
Dealing with complexity						x	x		x

The degree programme qualifies students for positions in applied research and various positions in companies in the biotechnology or food industry, pharma or cosmetics.

The primary areas of work in an industrial environment are product development, quality management and assurance, as well as manufacturing and process optimisation. Another possible field of work is applied research in particular in research institutes from the field. The results of surveys of graduates of the last years on their career paths reflect the target areas mentioned above. In these surveys, graduates listed jobs in the food industry, in the life sciences in the chemical and pharmaceutical sector amongst others. Universities and research institutes were also listed as current employers. The individual modules of the programme aim to equip students with knowledge and skills that are crucial for acquiring competencies in the relevant areas. Figure 1 depicts the connection between them.

	Pharmaceutical industry			
	Cosmetics industry			
	Food industry			
Areas of work	Product development, innovation	Quality management and assurance	Production (optimisation)	Research
Topics	Food innovation, cell cultures, aquaculture, purification of proteins, genetic modification	Establishing and monitoring quality management standards, applied product analytics Microbial risks, HACCP	Fermentation, cell cultures, installations and process optimisation	New detection systems, metabolic pathways and their regulation
Skills	Project management, creativity techniques etc.	Working with data, presenting and assessing them, compliance	Process analysis and assessment, life cycle assessment	Analytical thinking, academic writing and presentation

Figure 1: Connecting the degree programme and target industries

The contents taught in this degree programme are designed to prepare students for the requirements made in the respective target industries and areas of work. Topics such as food innovation, knowledge about cell and aquaculture or the purification of proteins and genetic modification, for example, are fundamental pillars for the work in product development/innovation. Knowledge of quality management systems and the ability to analyse products, including the presentation, assessment and interpretation of acquired data enable students to work in quality management and assurance. Production/product optimisation are

also regarded as a potential work area. To prepare students for their work here, they acquire skills in process analysis and assessment as well as technical knowledge on specific production processes.

The degree programme also aims to qualify students for working in research. Particularly, as students are increasingly interested in pursuing a doctorate and working in research institutions and in applied research. In addition to subject-specific contents, e.g. knowledge on detection systems or metabolic pathways and their regulation, students are also encouraged to think analytically and write academic papers as well as deliver academic presentations.

2.2 Concept of the degree programme

The degree programme's title is *Applied Biotechnology and Food Science*. The period of time designated to complete the programme is three semesters. In accordance with the second amended Study and Examination Regulations, dated 17 May 2023, the language of instruction and examination is English. Thus, the degree programme is aimed at students of subject-related degree programmes both at FUAS and other German and international universities. The President's Office grants admission to the master's degree programme based on a recommendation made by an admission committee composed of two members of teaching staff from the programme. The selection committee shall be designated by the body of the programme's teaching staff and confirmed by the Faculty Board of the Faculty of Energy and Life Science. Admission will be granted to applicants who graduated from degree programmes in biotechnology and/or food technology and subject-related degree programmes, if those programmes were comprised of a minimum of 210 CP and the final grade was at least GUT [GOOD]. Applicants who graduated with a final grade of at least BEFRIEDIGEND [SATISFACTORY] may be admitted to the master's degree programme if the selection committee issues a positive statement in regards to admission. Related degree programmes are programmes from the natural sciences and engineering, such as Bio Process Engineering, Bio Engineering, Food Engineering or Food Chemistry. For applicants who have completed a degree programme comprised of less than 210 CP, the admission committee will individually assess the qualifications necessary for an admission to the degree programme. Following an assessment of the qualifications and knowledge required, applicants may be admitted to the programme with or without conditions. An overview of the curriculum is given in figure 2.

hpw	1 st semester (summer)	2 nd semester (winter)	3 rd semester (summer)
1	Bioanalytical Techniques 4 hpw, 6 CP	Research Proposal 4 hpw, 6 CP	Master's thesis 30 CP
2			
3			
4			
5	Production Organisms 4 hpw, 6 CP	Team Project 8 hpw, 12 CP	
6			
7			
8	Ind. Food Processing 4 hpw, 6 CP		
9			
10			
11			
12	Food Innovations 4 hpw, 6 CP	Scientific Conference 4 hpw, 6 CP	
13			
14			
15			
16	Elective Courses 1 (IndieS) 4 hpw, 6 CP	Elective Courses 2 (IndieS) 4 hpw, 6 CP	
17			
18			
19			
20			

Figure 2: Curriculum of the degree programme *Applied Biotechnology and Food Science*

The focus of the first semester is on theory, this is reflected in the modules “Bioanalytical Techniques”, “Production Organisms”, “Industrial Food Processing” and “Food Innovations”. Students further deepen the subject-related knowledge they already have on these topics and by doing so create a solid foundation for the project-oriented second semester of the programme. In their second semester, students prepare a project application in the module “Research Proposal”. In the “Team Project” module, they turn their proposed project into reality in groups of up to 8 students. The projects deal with questions from applied research and current topics from the field of bio and food technology. In addition to pursuing their own research, students complete the module “Scientific Conference”. In this module they organise and hold their own scientific conference with the objective to present their research results in public.

An Elective is also offered in each semester. Here, students can choose from subject-related as well as more general modules (so called IndieS).

The third semester is designated to the master's thesis in which students are expected to independently work on a current question from bio or food technology.

The didactic methods and tools applied in each module are presented in detail in the module directory and include a number of teaching and learning concepts. The teaching methods and didactic tools used, support students in achieving the intended learning outcome.

Classes follow the problem-based learning approach and are held as seminars. Furthermore, classes can take the form of a project as this form of teaching enables students to acquire the key qualifications and skills in the best possible manner. The group projects promote a self-motivated and independent manner of working. As a focus is put on working on complex problems with various actors involved on different levels, students not only apply their subject-specific knowledge, they also practice social skills required when working in a team as well as on their own. Students learn to work in a target and resource-oriented manner and acquire communication skills at the same time. The project as a teaching method offers students the opportunity to apply the knowledge and skills they have acquired so far in real tasks and get acquainted with cooperative, team-oriented work across disciplines in a larger context.

Furthermore, learning methods that do not require a specific location are applied in this programme with the help of platforms such as Stud.IP, Moodle and Webex. These tools form the basis for e-learning and blended learning. We put a focus on blended learning, i.e. students combine working and studying on their own using electronic media and in the classroom, lectures are held via video conference tools, tutorials are held online and electronic tools are used in the classroom. By applying these methods, we aim to enable students to learn independently of their location and at the same time expand the portfolio of methods used, e.g. by using wikis.

2.3 Mobility

As the degree programme is taught in English, it welcomes both international students to study at Flensburg University of Applied Sciences (FUAS) and students of the Applied Biotechnology and Food Science programme to spend a semester abroad. FUAS' international network covers more than 60 partner universities. There is a range of programmes that support students in spending time abroad, e.g. with funds: Erasmus, Erasmus+, BAFÖG funding for semester(s) abroad and the DAAD for example. FUAS' partner universities can be found on our website, they can also be filtered by degree programme: <https://hs-flensburg.de/en/hochschule/international-office/partnerhochschulen>.

The Bio and Food Technology department has active relationships with the following international universities in particular:

- University of Jember (Indonesia)
- University of Applied Sciences and Arts Northwestern Switzerland (Switzerland)
- University Concepcion and University Santiago (Chile)

The most suitable time to spend a semester abroad is the thesis semester.

2.4 Assessment & exams

Assessment & exams are regulated by Flensburg University of Applied Sciences' Principles of Assessment [*Prüfungsverfahrensordnung*] and in the Study and Examination Regulations of the degree programme "Applied Biotechnology and Food Science".

For most modules three types of assessment are available. The member of teaching staff responsible for a module will announce the form of assessment applicable that semester at the start of each semester.

By giving the members of teaching staff the choice of the form of assessment, they can reflect on whether an assessment is suitable, whether and how it should be changed or developed further. Next to this individual reflection by each member of teaching staff, the available forms of assessment and the shape they may take are also discussed among all members of teaching staff of the degree programme. This discussion also takes into account the student feedback collected at the end of the programme's second semester each year.

To ensure transparency of the assessment criteria, the member of teaching staff responsible for a module will present them at the beginning of each semester. An overview of these criteria is available for many modules; these overviews are made available for students of a module via Stud.IP.

The organisation of all exams is coordinated by the Examinations Office. There are two exam periods each semester, one right before and one after the teaching period. Students have to register for all the exams they wish to take before the start of each exam period, independently of the form of assessment (written exam, written final exam, term paper, oral exam etc.) a module requires. The exams organised by the Examinations Office take place within the relevant exam period. The Examinations Office publishes an examination schedule. The schedules and times for the current exam period can be found on FUAS' website: <https://hs-flensburg.de/node/1805>. Written exams are offered in three subsequent exam periods. This means students can take the exam, either as their first attempt or as a re-take exam, directly at the end of the semester they take the module in or at the beginning or the end of the following semester.

Exams and assessment not organised by the Examinations Office take place outside the exam period. The members of teaching staff responsible for a module will announce the dates for written final exams, oral exams or the deadline for term papers to be handed in by. They will announce the rules for how these forms of assessment can be re-taken at the beginning of the semester, too. In accordance with FUAS' Principles of Assessment [*Prüfungsverfahrensordnung*] a minimum of two dates are to be offered per year if the form of assessment permits it. The members of teaching staff of the programme will discuss the dates for the assessments not organised by the Examinations Office before the start of each semester, in order to avoid an overlap of dates and to spread out the frequency of exams.

The Examinations Office defines a deadline by which all marks have to be handed in for each exam period. The members of teaching staff pass on the exam results to the Examinations Office by entering them into the FlexNow platform. By doing so, the results are published and entered into students' transcript of grades.

The master's thesis is an exception to this rule. Students can start working on their thesis at any point in time. The pre-requisite for registering for the thesis are 30 ECTS Credit Points. The

master's thesis is usually written outside Flensburg University of Applied Sciences with research institutions or in an industry context. In individual cases the thesis can also be written as part of a research project at Flensburg University of Applied Sciences. Students usually find their placements for writing their theses on their own. If challenges should occur in this process, the teaching staff of the degree programme will offer support to students in finding a topic for their thesis. Students can use the internet or ads published on FUAS' campus for their search. Contacts students made when completing their bachelor's thesis can also provide opportunities in this context. Students will usually find two members of FUAS teaching staff (first and second supervisor) to supervise the thesis, in individual cases a representative of the company can be second supervisor. The topic, title and contents of the thesis should be agreed upon between the student and the supervisors before the student registers the thesis. The subject-specific support and supervision will mostly be provided by the institution hosting the student. FUAS' supervisors will offer support when needed. Once a student handed in their thesis, a date for the colloquium will be found within a period of six weeks.

2.5 Equal opportunities, compensation of disadvantages

There are concepts in place and measures pursued at Flensburg University of Applied Sciences to promote equal opportunities for all people no matter what their gender, social or ethnical background or their situation in life is. These measures are also supported by the coordinator of the degree programme and the Faculty for Energy and Life Science.

We regard the promotion of equal opportunities as non-negotiable, as a task and as a joint objective and duty. This becomes visible in publicity and marketing activities (e.g. gender-neutral website, flyers, photographs and images that do not reproduce stereotypes); it is also part of FUAS' codex for good working conditions. With the latter document FUAS commits itself to actively pursue diversity, a high quality of life on campus for its students and staff as well as to promote the reconciliation of work/studies and family.

We condemn all forms of discrimination. FUAS regularly offers courses to create awareness for discrimination and reduce it, these courses are open for all university members. They deal with topics such as non-discriminatory language, compensation of disadvantages, intercultural communication, the trans* inter* non-binary* (TIN*)-inclusive university, unconscious bias trainings and nonviolent communication.

A welcoming culture is part of FUAS identity – on-boarding measures are established for students (orientation week "TOP Woche", peer mentoring) as well as for new professors (mentoring) and contract lecturers. FUAS specifically pursues measures that promote degree programmes in which female students are underrepresented amongst female pupils. One such measure is a "student for a day"-programme for female pupils of the higher grades in STEM subjects that takes place once a year.

A designated teacher who hosts school classes in a school lab at FUAS is part of the Bio and Food Technology department. The lab is a big success and focusses on the life sciences and

sustainability. This way, schoolchildren can gain experience in the natural sciences outside school at a young age. We plan to expand our offer of information events in which we present future career options for the graduates of universities of applied sciences.

We are in regular contact with both FUAS' Student Administration and the Equal Opportunities Officer to ensure that the experience of current and past student with children help future students in the same situation, including information to ensure criteria relevant for possible funding are being met. FUAS' Equal Opportunities Officer offers consultation on scholarships and funding and current information for students with their own family in particular. Student Administration already points out possibilities to compensate disadvantageous circumstances to students with children when they apply for a place of study. FUAS supports its members in finding childcare and with questions on parental leave. Furthermore, we aim to make the schedules for our students as family-friendly as possible when the schedules are planned each semester (e.g. offering classes at times when childcare will usually be provided in kindergartens etc.). This should enable all students to participate in modules without extra effort or complications. (This is also relevant as many of the degree programme's modules are intended for group work.)

FUAS' Principles of Assessment [*Prüfungsverfahrensordnung*] take into account the specific needs or circumstances of students with disabilities or impairments (cf. annex 4, § 20 Principles of Assessment). FUAS aims to allow for adjustments that are individually suitable and appropriate. Close cooperation with the relevant consultation services, FUAS' Facilities Management and room planning ensure that accessible classrooms can be made available for students with a disability. FUAS is currently working on reducing existing barriers in its buildings and in online teaching.

Courses and workshops to gain transferrable skills and qualifications independent of the subject of study are regularly on offer for students to help them make their start into their career a successful one. Topics include application and assessment centre training, presentation skills, time management, self-assertiveness, stress management and career planning.

3. Module overview

Module name		Industrial Food Processing		
Overview				
Abbreviation		IFP		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		In this module, students gain in-depth knowledge on aspects of industrial food production. Students are enabled to plan industrial production processes taking into account the technological, legal and hygienic conditions.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☐ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge on industrial food production and quality management		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT (1) and Pres, Pres, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		Attendance of at least 80%		
Contact person for this module		Prof. Dr. Andreas Nicolai, https://hs-flensburg.de/hochschule/personen/nicolaia		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Production process and cleaning - Validation/verification - Documentation requirements - Relevant knowledge of the legal basics <i>Skills:</i> - Planning a production process as well as its optimisation and qualification <i>Competencies:</i> - Identify problems/potential for optimisation, analyse them and implement improvements - Assess social, economic and ecological consequences
Contents	- Aspects of industrial food production - Layout of production processes - Validation/verification - Documentation of the processes - Repetition of HACCP - Cleaning
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	- Saravacos, G., Kostaropoulos, A.E.: Handbook of Food Processing Equipment, Springer - Fellows, P.J.: Food Processing Technology, Woodhead Publishing - Goyal, M.R., Mishra, S.K., Birwal, P.: Food Processing and Preservation Technology Relevant legal texts and source texts
Equipment and costs	None
Other	./.
Last updated	5 Jul 2024

Module name		Food Innovations		
Overview				
Abbreviation		FI		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		This module deals with product development processes in the food industry, including analysis steps, as well as innovations in the food industry.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☐ WiSe, ☒ SoSe		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge of product development in the food industry and sensory analysis		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT (2), WR and Pres, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		Attendance of at least 80%		
Contact person for this module		Prof. Dr. Birte Nicolai, https://hs-flensburg.de/hochschule/personen/nicolai		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Product development process (incl. creativity techniques and management skills) - Food innovations - Analysis along the process <i>Skills:</i> - Application of creativity techniques and management skills - Researching literature and sources and including the results in presentations and written reports <i>Competencies:</i> - Identification of potential for innovation, analysing and presenting it using technical and specialist literature - Development of teamwork and leadership skills
Contents	- Product development process - Analyses in product development - Change leadership - Food innovations: New raw materials, products, packaging and processes
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	- Galanakis, C.M.: Innovation Strategies in the Food Industry, Academic Press - Serventi, L.: Sustainable Food Innovation, Springer - Cortez Vieira M.M., Pastrana, L., Aguilera, J.: Sustainable Innovations in Food Product Design, Springer Relevant source texts
Equipment and costs	None
Other	./.
Last updated	5 Jul 2024

Module name		Production Organisms		
Overview				
Abbreviation		PO		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		Students will examine production organisms in bio and food technology and their biosynthetic pathways. The concept of “metabolic engineering” is introduced based on insights from biochemistry, thermodynamics and molecular biology. Students will also apply it.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☐ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge of microbiology, biochemistry, molecular biology		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT (2), WR, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		Attendance of at least 80%		
Contact person for this module		Prof. Dr. Antje Labes, https://hs-flensburg.de/hochschule/personen/labes		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Advanced knowledge of microbial physiology - Know and name substrates, enzymes and products from microbial metabolic pathways - Differentiate between various levels of regulation - Identify industrial production organisms and understand their cellular reactions - Identify and regulate cellular responses to stress - Know methods to manipulate biosynthetic pathways in a targeted manner - Gain and apply more in-depth knowledge of bio analytics - Know and understand production processes from industrial biotechnology and have the ability to optimise them, with the focus lying on the molecular basics and the analytics of metabolites - Ordinance on Safety and Health Protection at Workplaces Involving Biological Agents (Biological Agents Ordinance - <i>BioStoffV</i>) and Law on Genetic Engineering (<i>Gentechnikgesetz</i>) <i>Skills:</i> - Connecting biotechnological products and production organisms - Analysing metabolic pathways on the basis of biochemical and molecular data - Statistics and documentation of analysis results - Bioinformatic research of genes, proteins and metabolic pathways - Handling data and statistics - Literature research - Academic writing and putting information in relation <i>Competencies:</i> - Connecting knowledge on biochemistry, microbiology and molecular biology - Analysis of metabolic pathways based on analytic and molecular data - Determining analysis processes - Analysis of system behaviour - Retrosynthetic analysis - Reviewing data and its interpretation critically

Contents	- General metabolic pathways in microorganisms relevant in biotechnology - Metabolic regulation: regulation levels, advanced enzymology, applying regulatory principles for process design - Cellular thermodynamics - Metabolic engineering - System biology - Legal and ethical basics for the genetic modification of microorganisms
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff and independent learning
Recommended reading	- Gottschalk: Bacterial Metabolism, Springer - Dubey, R.C. A.: Textbook of Biotechnology, Chand Verlag - Wittmann C., Liao, J.: Industrial Biotechnology, VCH Wiley Relevant legal texts and source texts
Equipment and costs	None
Other	./.
Last updated	5 Jul 2024

Module name		Bioanalytical Techniques		
Overview				
Abbreviation		BT		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		Students will be introduced to advanced methods of bioanalysis. They understand the technical, device basics of a method. They are able to analyse and interpret data and apply the methods with specific questions.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☐ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge of biochemistry, biology, chemistry, physics and analysis		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT(2), WT (1) and Pres, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		Attendance of at least 80%		
Contact person for this module		N.N.		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Methods of advanced bioanalysis <i>Skills:</i> - Development of biochemical analysis methods - Combining knowledge of biochemistry, chemistry and physics to form the basis for an analysis method - Definition of parameters to validate analysis methods - Reviewing analysis results critically - Applying mathematical methods to handle large sets of data - Literature research <i>Competencies:</i> - Independent development and assessment of bioanalysis methods - Critical evaluation of analysis results
Contents	Application and chemical-physical basis of advanced bioanalysis processes, e.g. - Proteomics - Structural biology - Enzyme reactions - Analysis of nucleic acids - Spectroscopy
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	Current technical literature
Equipment and costs	None
Other	./.
Last updated	5 Jul 2024

Module name		Elective Courses 1		
Overview				
Abbreviation		EC1		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		Students can choose from a number of options for this module.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L or Sem or Lab	60	120
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? Yes		
Offered in		☐ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: depending on course on offer		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English) or GER (German)		
Type of assessment		Examination		
Form of assessment		see short description		
Examination language		EN (English) or GER (German)		
Pre-requisites for the acquisition of Credit Points as part of the module		attendance of at least 80% (if applicable) valid safety instructions for lab parts (if applicable)		
Contact person for this module		All members of teaching staff		
Registration via		Stud.IP or Moodle		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Specific topics and methodological skills <i>Skills:</i> - Additional methodology skills - Independent study of specific topics <i>Competencies:</i> - Extension of the overview of the subject - Ability to think and work across subject areas
Contents	Specific topics from biotechnology and food technology as well as interdisciplinary topics. The specific contents can be found in the descriptions for each module.
How is the class taught?	taught on campus, online or hybrid
How do students learn?	guided by members of teaching staff or independent learning
Recommended reading	Depends on the module's subject
Equipment and costs	Depending on module: lab coat, safety glasses, lab book and permanent marker (if module contains a lab part)
Other	./.
Last updated	5 Jul 2024

Module name		Research Proposal		
Overview				
Abbreviation		RP		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		How do I write a successful research proposal? In this module students acquire the fundamentals of funded research, writing their own research proposal and project management. They compose research applications in accordance with a call for tenders and they produce written and oral presentations of their projects.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☒ winter semester, ☐ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge of academic writing and presentation		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☐ 1 ☒ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT (2), WR and Pres, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		Attendance of at least 80% The module “Team Project” has to be taken at the same time		
Contact person for this module		Prof. Dr. Antje Labes, https://hs-flensburg.de/hochschule/personen/labes		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Ethics in science and research - Design and structure of academic publications - Chronology of writing academic papers - Literature research - Design and structure of applications - Options and opportunities for funding and research grants <i>Skills:</i> - Ability to formulate problems - Ability to apply methodology for project planning - Writing a work schedule and filing an application in the field of bio and food technology - Structuring work and tasks logically - Focus, identify relevant points and implement them, identify, localise and acquire necessary information <i>Competencies:</i> - Stating objectives - Creating a research application - Creating a project report/an academic paper/publication - Acquiring an overview of the research topic - Literature research - Writing in English - Subject-specific terminology - Project presentation in front of a panel of experts
Contents	- Funding and grants - Basics of project and time management - Methodology for project implementation: Definition of an objective, time and milestone schedule, tasks, results - Design and structure of applications - Chronology of writing academic papers - Ethics in science and research - Design of experiments
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff

Recommended reading	- Andrews, G.: Research Proposal: Academic Writing Guide for Graduate Students, kindle edition - Dawson, C.: Introduction to Research Methods: A practical guide for anyone undertaking a research project, How To Books - Descombe, M.D.: Research Proposals: A Practical Guide (Open Up Study Skills), Open University Press - Drews, G., Hillebrand, N., Kärner, M., Peipe, S., - Starck, J.M.: Peer Review für wissenschaftliche Fachjournale, Springer - Portny, S. E.: Project Management for dummies, Wiley - Kotter, J.: Our iceberg is melting, Macmillan Academic literature and patent literature
Equipment and costs	<i>None</i>
Other	./.
Last updated	5 Jul 2024

Module name		Scientific Conference		
Overview				
Abbreviation		SC		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		In this module, students are in charge of organising a scientific conference, including its contents and carrying out the actual conference. They present the results of their projects in presentations and on posters.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☒ winter semester, ☐ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge of academic research and writing techniques		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☐ 1 ☒ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT (2), WR and Pres, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		Attendance of at least 80% Participation in the module "Team Project"		
Contact person for this module		Prof. Dr. Birte Nicolai, https://hs-flensburg.de/hochschule/personen/nicolai		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Structure and contents of a scientific conference - Theoretical foundation for the creation of posters, presentations and scientific talks - Presentation of work results <i>Skills:</i> - Creation of posters and scientific presentations - Application of the presentation skills acquired - Organisation of scientific events <i>Competencies:</i> - Taking on responsibility - Ability to criticize constructively and accept criticism - Ability to work in teams and lead them - Communication skills
Contents	- Theoretical foundation for the organisation of a scientific conference, including the necessary knowledge on how to present research topics and results in the form of a presentation or a poster - Creation of a scientific poster - Presentation of a poster - Giving and receiving feedback
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	Academic literature and patent literature
Equipment and costs	None
Other	./.
Last updated	5 Jul 2024

Module name		Team Project		
Overview				
Abbreviation		TP		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		In the Team Project module, students work on actual research questions in a scientific and application-oriented manner. The projects deal with questions from applied research in the field of bio and food technology.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
8	12	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		P	120	240
		Total (in hours)	120	240
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☒ winter semester, ☐ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge and theoretical basis of lab work and planning test series and projects.		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☐ 1 ☒ 2 ☒ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Coursework		
Form of assessment		OA (WT (2), WR, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		The modules “Research Proposal” and “Scientific Conference” have to be taken at the same time Valid safety instructions for working in labs		
Contact person for this module		NN		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Subject-specific specialist knowledge on the project - Writing academic publications - Peer review process <i>Skills:</i> - Working in teams - Planning experiments - Assessment of analytic and statistical data - Planning analyses - Composing a publication and peer-review of manuscripts <i>Competencies:</i> - Applying principles of project management - Integrating own data in a scientific context - Reading and discussing primary sources - Analytical thinking - Giving feedback in an academic context - Reviewing new insights critically
Contents	The projects focus on current topics from applied research.
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	Current literature according to the projects' topics.
Equipment and costs	Lab coat and safety glasses
Other	./.
Last updated	5 Jul 2024

Module name		Elective Course 2		
Overview				
Abbreviation		EC2		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		<i>Students can choose from a number of options for this module.</i>		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L or Sem or Lab	60	120
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? Yes		
Offered in		☒ winter semester, ☐ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: may apply, depending on course on offer		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☐ 1 ☒ 2 ☐ 3 ☐ free		
Language of instruction		EN (English) or GER (German)		
Type of assessment		Examination		
Form of assessment		see short description		
Examination language		EN (English) or GER (German)		
Pre-requisites for the acquisition of Credit Points as part of the module		May apply: attendance of at least 80% Valid safety instructions for lab parts (if applicable)		
Contact person for this module		All members of teaching staff		
Registration via		Stud.IP or Moodle		
Contents				
Intended learning outcome and qualifications		Knowledge: - Specific topics and methodological skills Skills: - Additional methodology skills - Independent study of specific topics Competencies: - Extension of the overview of the subject		

	- Ability to think and work across subject areas
Contents	Specific topics from biotechnology and food technology as well as interdisciplinary topics. The specific contents can be found in the descriptions for each module.
How is the class taught?	taught on campus, online or hybrid
How do students learn?	guided by members of teaching staff or independent learning
Recommended reading	Depends on the module's subject
Equipment and costs	Lab coat, safety glasses, lab book and permanent marker (if module contains a lab part)
Other	./.
Last updated	5 Jul 2024

Module name		Quality Management		
Overview				
Abbreviation		QM		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		In this module, students acquire basic knowledge and skills in quality management.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L	30	60
		T	30	60
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? Yes		
Offered in		☒ winter semester, ☐ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: none		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☐ 1 ☒ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		WE (2), OA		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		Prof. Dr. Claus Hartmann https://hs-flensburg.de/hochschule/personen/hartmann		
Registration via		Stud.IP		
Contents				
Intended learning outcome and qualifications		Knowledge: - Students are familiar with the basic terminology and the most relevant methods in quality management - They understand the holistic approach of Total Quality Management (TQM)		

	- They gain an understanding of the terms quality, quality management, quality assurance and management systems <i>Skills:</i> - Students are able to carry out quality management-related analyses of operational processes and identify weak points through them <i>Competencies:</i> - Students are able to choose the appropriate quality management methods for operational questions and applications. - They can support the implementation of these relevant quality management methods.
Contents	- Introduction to quality management and its requirements - Quality management principles, methods and tools - QM systems - Quality assurance tasks TQM (and its elements)
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	- Schmitt, R.: Qualitätsmanagement: Strategien, Methoden, Techniken. Hanser Verlag - Linss, G.: Qualitätsmanagement für Ingenieure. Hanser Verlag (Recommended reading in the most current edition respectively)
Equipment and costs	None
Other	./.
Last updated	25 Nov 2024

Module name		Advanced Bioprocess Engineering		
Overview				
Abbreviation		ABE		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		<i>In this module, students acquire in-depth knowledge of bioprocess engineering. The contents include advanced microbial production systems, cell culture technology and process optimisation.</i>		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L	60	120
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☐ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: none		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT(2), WT (1) and Pres, TD)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		NN		
Registration via		Stud.IP		
Contents				
Intended learning outcome and qualifications		Knowledge - Advanced knowledge of bioprocess engineering - Cell culture technology - Process optimisation (incl. DOE)		

	<i>Skills</i> - Reading and analysing primary sources - Literature research and inter-library loans - Interpretation of process data - Application of DOE tools - Creating a profitability analysis <i>Skills and competencies</i> - Design of production processes based on results from literature research - Implementation of process optimisation using DOE - Ability to work in a team (creating a presentation as a group) - Communication skills (presenting specialist content)
Contents	1. Introduction, organisation of presentations, literature research, inter-library loans 2. Advanced microbial production processes 3. Cell culture technology 3.1 Animal cell culture technology (mammals) 3.2 Plant Cell culture technology (microalgae) 4. Process optimisation 4.1 Strategies 4.2 Design of experiment (DOE) 4.3 Modelling 5. Safety and legal aspects
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	- Doran, M.D.: Bioprocess Engineering Principles, Elsevier - Freshney, R.I.: Culture of Animal Cells, Wiley& Sons - Bux, F., Chisti, Y.: Algae Biotechnology, Springer
Equipment and costs	None
Other	./.
Last updated	9 Jul 2024

Module name		Food Protection		
Overview				
Abbreviation		FP		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		The module FP focusses on current developments of technologies for the biological preservation of food		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
2	3	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L	30	60
		Total (in hours)	30	60
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☐ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: none		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☐ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WT (2), WR)		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		Prof. Dr. Detlef Goelling https://hs-flensburg.de/hochschule/personen/goelling		
Registration via		Stud.IP		
Contents				
Intended learning outcome and qualifications		Knowledge - Students are familiar with the theory behind strain development and screening - They are familiar with the development of assay systems - They know how the products are produced Skills and competencies		

	- Students are able to identify application technologies for different areas, such as the dairy, meat and baked goods industry
Contents	- Strain development and screening - Development of assay systems - Production - Application technologies for different areas, such as the dairy, meat and baked goods industry
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	- Current scientific literature
Equipment and costs	None
Other	./.
Last updated	9 Jul 2024

Module name		Leading and Presenting in Teams		
Overview				
Abbreviation		LPT		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		In this module, students learn the art of teamwork. They also learn how to communicate and present convincingly, how to lead teams and manage conflicts.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L/Sem	60	120
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☒ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: none		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☒ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (Pres, WR, WT (1.5))		
Examination language		EN (English)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		Victoria Richter https://hs-flensburg.de/hochschule/personen/richter		
Registration via		Moodle/Stud.IP		
Contents				
Intended learning outcome and qualifications		Knowledge - In this course you will improve your English skills, both spoken and written, up to level B2/C1 - You are familiar with the role of multinational companies in the global economy		

	- You will learn something about organisation culture and the theories experts on this field have come up with <i>Skills</i> - You understand the complexity of global trade based on trading blocs and intercultural challenges - You know how to apply theories on group dynamics in practice and can use this knowledge in your future job - You are able to distinguish between reliable and unreliable sources <i>Skills and competencies</i> - In this module, you will learn to give a professional presentation in a team and gain confidence presenting in English - You understand the meaning of roles and phases in teams - You understand the relevance of team processes and how you can take on a leading role in a team - You are able to present and defend your viewpoint and build up a clear line of argumentation
Contents	Teams - You learn about and experiences team phases and understand how to take appropriate measures to strengthen them - You strengthen your own observation skills as part of working in a team - You learn about team dynamics and effective leadership - You know how to deal with diversity in teams (job titles, approaches, perspectives, objectives) - You develop an awareness for the function of roles in a team - You gain in-depth insights into the relevance of feedback and use your knowledge by giving and receiving 360° feedback - You attend a team coaching and reflection Research and rhetoric - You further develop your ability to research and use different sources and you are able to differentiate between their relevance - You are able to choose a particular viewpoint and build up a clear line of argumentation - You are familiar with citation techniques and can present in a rhetorically sound manner Presentations In this module, you learn about the structure of a good presentation, this includes: - understanding the needs of your audience and presenting in an effective and interactive manner - forming an opinion and defending it

	- advanced PowerPoint skills - leading a discussion in a team and with an audience International economy You research multinational businesses and gain insights into: - the complexity of trading blocs, intercultural challenges, local and global interrelations under the roof of an organisation - cultural differences in the global economy - expert opinions on organisation culture (e.g. Kotter, Hofstede, Schein, Johnson) - effective research and analysis of the data gathered - presentation and interaction with an audience - feedback models, processes, rules and application of meta communication - experience in group dynamics, including the understanding and intervention of and influence on group processes - leading teams in theory and practice, including conflict management - understanding the meaning of roles and phases in teams - effective communication in English, both spoken and written
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	- Will be announced at the start of the semester
Equipment and costs	Computer with the latest version of PowerPoint
Other	This module is currently being developed further. This module description is a current status.
Last updated	20 Nov 2024

Module name		German as a foreign language GER A1		
Overview				
Abbreviation		GAFLA1		
Faculty/Unit		Centre for International Education and Life-Long-Learning		
Short description		In this module, students acquire basic German language skills at A1 level (breakthrough or beginners' level).		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L	30	60
		T	30	60
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? Yes		
Offered in		☒ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: none		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☒ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English) / GER (German)		
Type of assessment		Examination		
Form of assessment		OA (TD, WT (1.5))		
Examination language		GER (German)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		Victoria Richter		
Registration via		Stud.IP		
Contents				
Intended learning outcome and qualifications		Knowledge: - In this module you will improve your spoken and written German skills to A1 level - You know how to form basic grammatical structures - You will acquire basic vocabulary Skills:		

	- You can understand and use familiar everyday expressions and very basic phrases - You can introduce yourself to others - You can ask and answer questions about personal details <i>Competencies:</i> - In this course you will learn to interact in a simple way - You will learn the basics of pronunciation - You are able to answer questions on simple topics
Contents	Vocabulary - The alphabet - Spelling - Numbers - Greetings - Introducing yourself - Shopping - Family - Telling the time - Hobbies Grammar - Verbs and conjugation - Regular and irregular verbs - to have and to be - Basics on sentence structure - Definite and indefinite articles - Plurals - Possessive pronouns - Cases
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	Will be announced at the start of the semester
Equipment and costs	None
Other	./.
Last updated	20 Nov 2024

Module name		German as a foreign language GER A2/B1		
Overview				
Abbreviation		GAFLA2B1		
Faculty/Unit		Centre for International Education and Life-Long-Learning		
Short description		In this module, students acquire basic German language skills at A2 level (waystage) or B1 (threshold).		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
4	6	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		L	30	60
		T	30	60
		Total (in hours)	60	120
Module type		Compulsory Elective		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? Yes		
Offered in		☒ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: none		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☒ 1 ☒ 2 ☐ 3 ☐ free choice		
Language of instruction		EN (English) / GER (German)		
Type of assessment		Examination		
Form of assessment		OA (TD, WT (1.5))		
Examination language		GER (German)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		Victoria Richter		
Registration via		Stud.IP		
Contents				
Intended learning outcome and qualifications		Knowledge: - In this module you will improve your spoken and written German skills to waystage (A2) or threshold level (B1) - You know how to form intermediate beginner's or medium-level grammatical structures - You will acquire an intermediate vocabulary		

	<i>Skills:</i> - You can understand and use sentences and frequently used expressions related to most areas of immediate relevance - You can communicate on simple and routine tasks - You can lead an exchange of information on familiar and routine matters <i>Competencies:</i> - In this course you will learn to interact on intermediate level - You will learn to speak clearly and pronounce words you see in writing - You will be able to respond when addressed on intermediate-level topics
Contents	Vocabulary - Public authorities - Health and illness - In town - Polite requests - Description of the way - In a restaurant - Work and the workplace - Giving advice - Phone calls - Sports and fitness Grammar - Past tenses - Modal verbs - Past subjunctive - Prepositions of place - Indefinite pronouns - Conjunctions - Reflexive verbs - Verbs and prepositions
How is the class taught?	taught on campus
How do students learn?	guided by members of teaching staff
Recommended reading	Will be announced at the start of the semester
Equipment and costs	None
Other	./.
Last updated	20 Nov 2024

Module name		Master's thesis		
Overview				
Abbreviation		MT		
Faculty/Unit		Faculty 2: Energy and Life Science		
Short description		At the end of their studies, students work on a scientific question or topic, usually with an industry partner or in an applied research institute. This will then be the basis for their thesis.		
Hours per week (in class) (hpw)	ECTS Credit Points (CP)	Workload (in hours)		
	30	Type of class	Hours in class (in hours)	Revision (outside class) (in hours)
		T	0	900
		Total (in hours)	0	900
Module type		Compulsory		
Transferrable qualifications and skills		Is this module suitable for students from other degree programmes? No		
Offered in		☒ winter semester, ☒ summer semester		
Pre-requisites		Formal pre-requisites: see Study and Examination Regulations Subject-related pre-requisites: Basic knowledge of the relevant theories, general knowledge on lab work and planning test series or projects if applicable		
Allocation within the curriculum:		In which semesters of the degree programme should students take this module? ☐ 1st semester, ☐ 2nd semester, ☒ 3rd semester		
Language of instruction		EN (English)		
Type of assessment		Examination		
Form of assessment		OA (WR and Pres)		
Examination language		EN (English) or GER (German)		
Pre-requisites for the acquisition of Credit Points as part of the module		None		
Contact person for this module		Prof. Dr. Birte Nicolai		
Registration via		Stud.IP		

Contents	
Intended learning outcome and qualifications	<i>Knowledge:</i> - Acquisition of more in-depth knowledge on subjects from the course of studies, depending on the thesis' topic. <i>Skills:</i> - Further development of technical skills acquired during the course of studies, depending on the thesis' topic. - Project planning and implementation <i>Competencies:</i> - Transferring acquired knowledge and skills to new questions and topics - Students are able to prepare the results of their work for further use, present them, put them into context and discuss them.
Contents	Students independently work on questions from bio and food technology while applying scientific methods they have acquired as part of their studies. The content of the thesis depends on the question it sets out to answer.
How is the class taught?	determined individually
How do students learn?	independent-learning
Recommended reading	determined individually
Equipment and costs	May apply: lab coat and safety glasses
Other	./.
Last updated	5 Jul 2024

Explanations and abbreviations used in the module descriptions

Type of class

In accordance with the Study and Examination Regulations/ Regulations on the teaching load (*LVVO-Richtlinie*)

L - Lecture

Lab - Laboratory

T - Tutorial

P - Project

Sem - Seminar

MT – Master's Thesis

Type of grading

Type of assessment:

Ex - Examination

Form of assessment:

WE (n) - Written exam (n hours)

OA - other form of assessment; they specific type of assessment can either be determined in the module description or be announced at the start of a semester

WR - Written report

Pres - Presentation

TD - Technical discussion

WT (n) - Written test/exam as part of another form of assessment (n hours)

Where parts of an assessment are connected by "**and**": as well as

Where parts of an assessment are connected by ",": either or

Please note: Where lists of recommended reading are not sorted alphabetically, they are sorted by relevance.