Technische Hochschule Rosenheim

Faculty of Chemical Technologies and Economy

Curriculum

of the Program

International Bachelor of Engineering

Specialisation in Chemical Engineering, Environmental Technology and Process Automation

at

Rosenheim Technical University of Applied Sciences

Last updated/effective: March 11th, 2024

Content

1 Introduction

Engineers are innovation drivers and technology integrators. They enable nearly all sectors of the economy in Germany. The International Bachelor of Engineering programme enables you to take on managerial functions in engineering-technical fields and to function in higher-level cross-sectional positions. The degree programme provides a sound insight into the fields of modern engineering sciences. In addition, you gain international competencies as well as excellent German and English skills during your studies. International Engineers combine regional, national and international levels and fields of activity, for example in product development and manufacturing, software development, service, marketing and sales, planning, operation and testing of equipment/plants or quality management. Fundamental courses containing languages and technical basics are followed by specialised courses selected during the study programme. At Campus Burghausen, students can choose from the following specialisations: Chemical Engineering, Environmental Technology and Process Automation. In addition to an interdisciplinary, well-balanced range of modules at the respective campus and department, you can choose from attractive specialisation modules in the advanced course of study in each focus area and build up specific knowledge. This individual competence profile also enables you to manage very specialised projects or departments.

The International Bachelor of Engineering with a specialisation in Chemical Engineering imparts the competences required in the chemical industry for the development and scaling of processes. From engineering basics to process technology, materials and basics of process control, the degree programme covers the requirements placed on chemical engineers.

The specialization in environmental technology prepares for the production of material from renewable sources, reuse and recycling, protection of the environment regarding air, water and soil pollution as well as chemical and environmental analysis.

The specialization in process automation lays the basics in electrotechnics and programming, process control, and the use of new technologies like artificial intelligence or digital twin for the use in process control of chemical companies. In contrast to traditional mechatronics, the studies focus on the needs of the chemical industry with fluid control rather than robotics.

Note:

Students who are unsure of their final programme have the option to start their semester in

the IBE flexibly: The subjects in the first semester are identical in all degree programmes, therefore students can easily change to the specialisation of their choice after the first semester.

2 Qualification & study goals

The study programme aims to provide an education based on scientific knowledge and methods through application-oriented teaching. Graduates are qualified to work independently as a Bachelor of Engineering.

The specialization chemical engineering is intended to qualify students for engineering activities in the following fields of work:

- Process development (conception, design, calculation, simulation and construction, material selection and development, plant and process development),
- Production in chemical industry,
- Project planning,
- Commissioning and service,
- Operation and maintenance,
- Monitoring and assessment
- Technical Operations and Management

The specialization environmental technology is intended to qualify students for engineering activities in the following fields of work:

- Air, water and soil pollution and immission control
- Process development with focus on environmental engineering facilities
- Chemicals and material production from renewable sources
- Environmental analysis, monitoring and measuring technologies
- Circular Economy, recycling and waste management
- Operations and maintenance
- Technical Operations and Management

The specialization process automation is intended to qualify students for engineering activities in the following fields of work:

- Process control- (conception, design, calculation, simulation, system selection, development),
- Project planning,
- Commissioning and service,
- Operation and maintenance,
- Monitoring and assessment
- Technical Operations and Management

Attention is paid to a broad, qualified and interdisciplinary education, which enables graduates to work in a wide range of professions and industries. Career opportunities are offered not

only in business and utility companies, but also in public service administrations and in independent practice.

Increasingly, interdisciplinary knowledge is necessary for engineers to have an understanding of the totality of the product and/or process. The specialisation meets this need by combining the traditional contents of the engineering sciences and combining them with in-depth knowledge of the special challenges in chemical engineering/environmental technology/process automation.

Knowledge, skills and competences can be found in the following overview.

1. Scientific-Technical Basics

- **Knowledge:** The students know basic mathematical terms and methods as well as chemical, physical, material-specific, electrotechnical and information technology basics as well as apparatus and plant engineering.

- **Skills:** Students understand the procedures, are able to comprehend them and can familiarise themselves with more advanced methods.

- **Competencies:** The students apply the scientific-technical knowledge and skills to solve technical problems.

2. Subject-Specific Technical Basics

- **Engineering basics and knowledge of the specialization chemical engineering:** The students know mechanical, thermal and chemical process technology as well as its use in the chemical industry.

- **Engineering basics and knowledge of the specialization environmental technology:** The students know renewable materials and recycling, air, soil and water protection, Life Cycle Analysis, sustainable product design and green technology.

- **Engineering basics and knowledge of the specialization process automation:** The students know automation, measuring techniques, process control, sensors and actors, cross-linked production systems, simulation and plant safety.

- **Skills:** Based on the knowledge and methods, students know how to analyse and solve problems.

- **Competencies:** Students can select and implement procedures for the development of new, innovative production processes or make decisive contributions to these

developments.

3. Interdisciplinary, Social and Methodological Competences

- **Knowledge:** Current trends and currents in the information society are identified. The necessity of independent lifelong learning is recognised. Students acquire basic communication, organisational and presentation skills that enable them to work independently as well as in teams.

- **Skills:** Students are able to create their own opinion on a topic and present it in an understandable way.

- **Competencies:** Influencing the development of new technical products through innovative use. Effects of “plastics technology” on the environment and society are recognised, harmful influences are avoided, solutions for improving environmental compatibility are developed. Working on technical tasks in a team.

The specialisation can also be studied in the practice-integrated dual study variants “study with in-depth practice” or “combined study”.

3 Structure of the study programme and Rosenheim study model

The International Bachelor of Engineering programme leads to a Bachelor of Engineering degree in eight semesters, i.e. four years. The foundation courses during the first two semesters take place at Campus Rosenheim. From the third to the last semester, the studies take place at Campus Burghausen. The lectures of the first two semesters of IBE at Campus Rosenheim in the specialization plastics engineering are to be followed and will be recognized as equivalent subjects at Campus Burghausen. The subjects are listed below.

The first two semesters include central engineering fundamentals and integrated German language classes. These are taught in English. Parallel to this, students acquire the necessary German language skills in order to switch to the German-language main studies from the third semester onwards at Campus Burghausen and complete their studies in German. For this purpose, they complete three semesters of German language courses in the amount of 10 CP per semester, beginning with the acquisition of language level B1 according to the CEFR (Common European Framework of Reference for Languages) - German language skills at level A2 according to the CEFR are a language admission requirement for the degree programme. The acquisition of German language skills up to level C1 according to the CEFR within the framework of the basic studies qualifies students to transfer to the German-language main studies. Language acquisition supports successful internships and creates the basis for a successful connection to the regional labour market.

There is a common **starting semester** that qualifies students to study in each specialisation. From the third semester onwards, **subject-specific compulsory modules** are taught. From the third semester onwards, foreign students are introduced to German-language studies through **German taught courses**. In addition to the compulsory modules, from the sixth semester onwards students have the opportunity to take in-depth modules of their own choice in the defined areas.

The basis of the degree programme, in addition to the German language modules with 30 CPs, is a broad basic education in engineering subjects. This includes 10 CPs in mathematics, 5 CPs in physics, 5 CPs in engineering mechanics, 5 CPs in electrical engineering and 5 CPs in applied informatics, which form the basis for all participating engineering degree programmes and cover a very broad range of subjects. The diversification begins in the third semester, because in this semester mainly individual modules are offered per specialisation.

Examination concept

All modules correspond to at least 5 ECTS and have their own examination in the usual forms of examination in engineering-technical degree programmes, such as midterm examination, written examination, oral examination, examination study papers, colloquium, project work or seminary work.

Rosenheim study model

The Bachelor's degree programmes of the Faculty of Chemical Technology and Economy are geared towards an intensive interlocking of theory and industrial practice.

4 Module Overview of the first two semesters

In the first two semesters, the modules of IBE at Campus Rosenheim are to be followed and are approved to the respective counterpart at Campus Burghausen.

5 Study plan

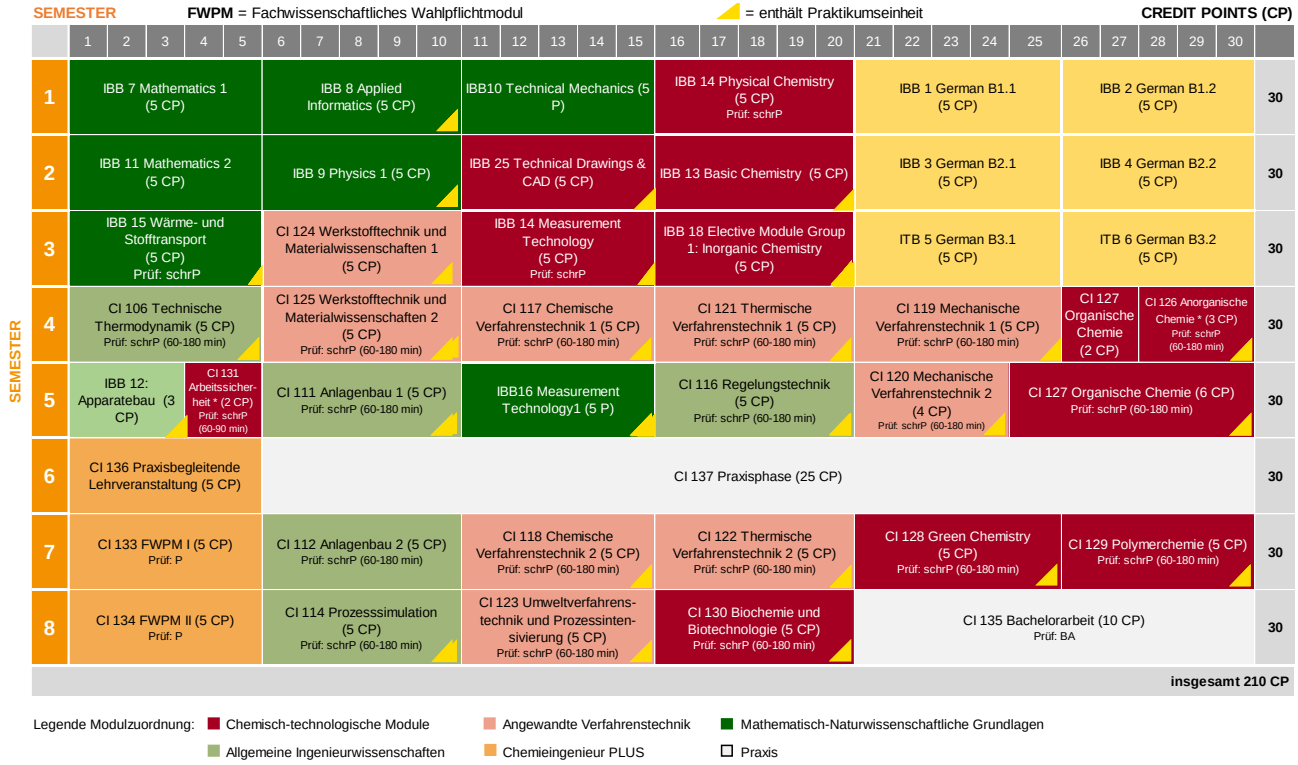

Figure 1: Study plan of the specialization chemical engineering

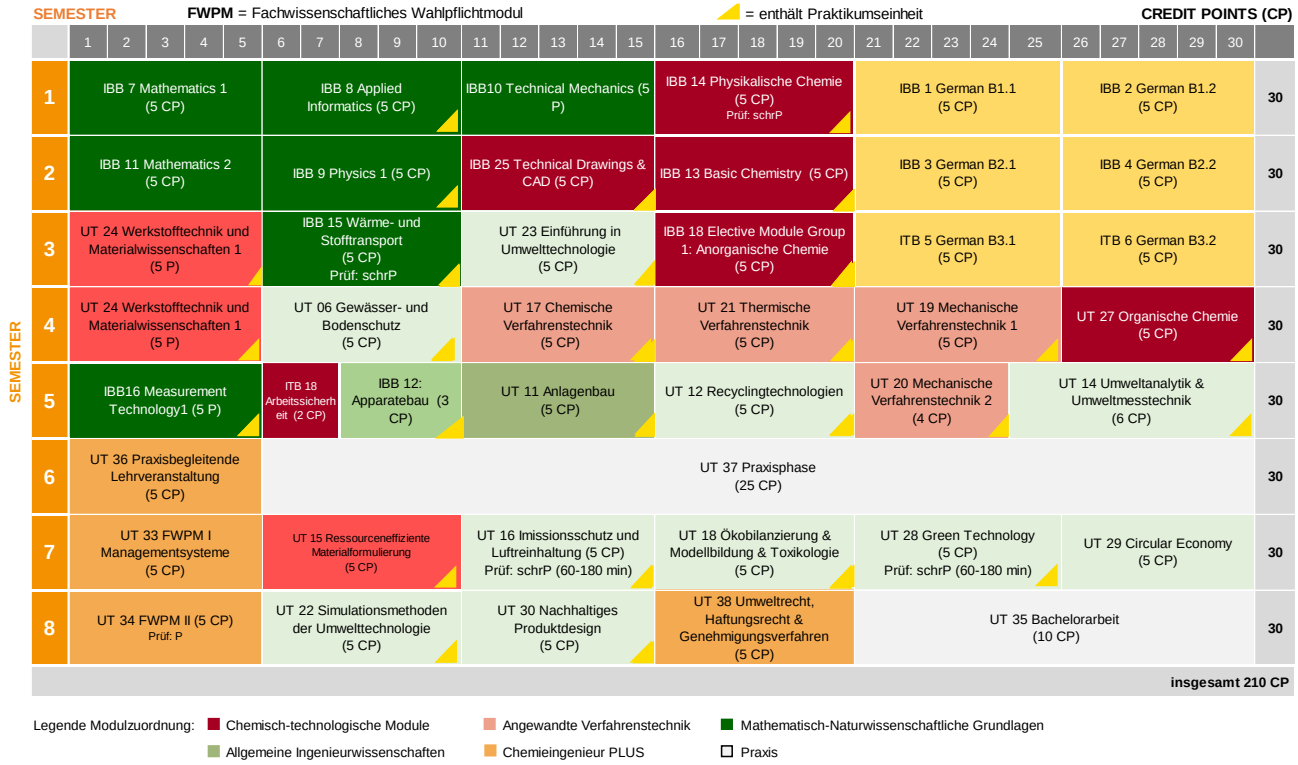

Figure 2: Study plan of the specialization environmental technology

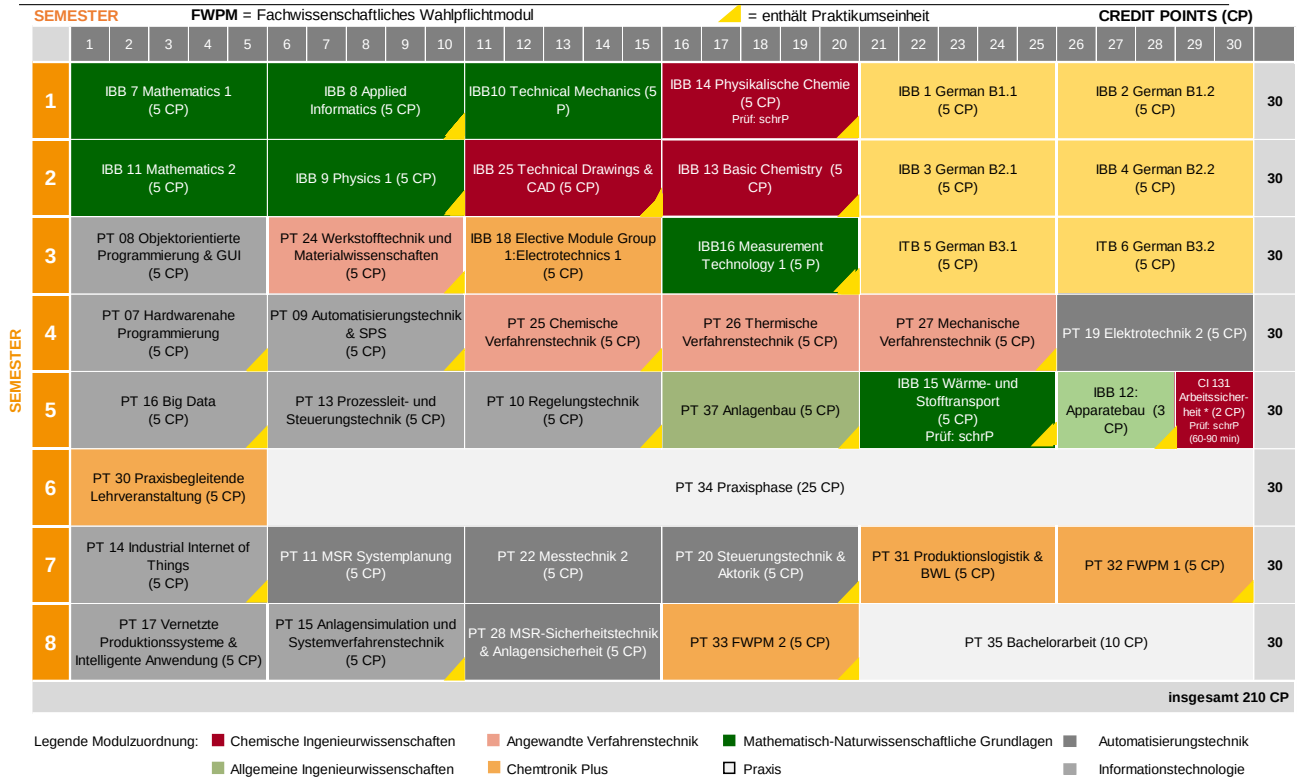

Figure 3: Study plan of the specialization process automation

6 Modules and their options

The individual modules contain thematically related teaching content.

For the main study course from 4th – 8th Semester, the module descriptions are in German only. The elective offer of FWPM can change from semester to semester. For the selection of the subject-specific elective modules for the next semester, elective documents are published in the community at about the end of the second third of the lecture period of the current semester. In the last weeks of the lecture period, students can then register by course selection. The catalogue of discipline-related elective courses valid for the next semester is announced at the same time.

7 Examinations and Certificates of Achievement

During the registration period, students must register **for all certificates** such as written examinations, course-related certificates (e.g. internships, design work) **in the Online-Center CZ register**. The registration period is usually in the first third of the lecture period and is an- announced publicly in the examination schedule (intranet).

In order to support rapid study progress, the following minimum achievements must be made:

The examinations in the modules “Mathematics 1” and “Physics 1” must be taken by the end of the second semester. If students exceed this deadline for reasons for which they themselves are responsible, the associated examinations shall be deemed to have been taken for the first time and not passed. Only those students are entitled to enter the fourth study semester and to continue their studies who

- at least 25 credit points from the subject-related study basics as outlined in the study and examinations regulations, and
- has achieved at least 20 credit points from the language modules “German as a Foreign Language” as outlined in the study and examinations regulations.

By the end of the first semester at the latest, students must decide on one of the following specializations:

- Chemical Engineering
- Environmental Technology
- Process automation

Further information can be found in the **study and examination regulations CZ** at International Bachelor of Engineering. The exact details of the examinations, in particular of the compulsory elective modules, can be found in the “Announcement of the performance records”, which are published by the university at the beginning of each semester. The Bachelor’s thesis is an examination performance. The work begins with the issue of the topic by the examination committee. The maximum processing time is 5 months. If the maximum processing time is exceeded for reasons for which the student is responsible, the examination is deemed to have been failed.

Deadlines:

The standard period of study, including the Bachelor’s thesis, is 8 semesters. If the standard period of study is exceeded by more than 2 semesters, all examinations that have not been taken by then will be deemed as failed for the first time. It is therefore recommended to take the examinations as early as possible.

8 Internships

During the internship, which accompanies the studies, increasingly complex tasks are taken on in typical engineering projects. The internship comprises 18 weeks of activities. Please note the notices of the Internship Office regarding admission requirements and deadlines.

Training contract

Before starting practical work, a training contract must be concluded with the training institution. Templates for training contracts can be found on the website of the Internship Office (see below). It is important to ensure that the training contract is properly completed:

- When entering the details of the training place, it is important to make sure that, in addition to the company name, the company's field of activity and the exact address with telephone and email address are also given.
- Period (date from - to) of the internship
- Name of the company supervisor with indication of their job title
- Company stamp and signatures

Three signed copies of the contract must be submitted to the Internship Office for review before the start of the internship. The internship officer of the Plastics Engineering degree programme shall give their professional approval. If the internship position is changed, a new contract must be concluded. This must be submitted again in advance to the Internship Office and approved by the Internship Officer of the Plastics Engineering programme.

Sample contracts for dual students who enter into an employment relationship with a company can also be found on the website of the **Internship Office** CZ.

Practical training during studies

Timing and scope

The 18-week internship accompanying the degree programme is completed as an industrial internship. It is possible to divide the internship into several blocks. These can also be completed at several companies. A block comprises at least four weeks and includes a uniform problem. An interruption for examinations is permissible.

Timing: It can be carried out in a practical semester, which is planned as the 6th semester. Alternatively, the practical course can be carried out in the practical phases P3 to P6. The internship accompanying the course of study is intended to impart practice in engineering work. Without having studied at least three semesters, it is hardly possible to carry out engineering-related activities. Therefore, the internship should not be started before the practical phase P3. In case of doubt, please consult the internship representative of the Plastics Engineering programme.

Training objective

The aim of the industrial internship is to introduce students to the activities and working methods of an engineer on the basis of concrete tasks. The objectives of the associated practical courses (PLV) are the ability to think through operational processes competently and independently and the ability to make decisions taking into account technical, economic and ecological aspects.

Training content of the industrial internship

The activities to be carried out during the internship must meet the requirements of engineering work. In principle, each student is responsible for this themselves. Ultimately, the internship officer only sees the contents when the report is submitted. This can lead to difficulties in the recognition of the internship if engineering activities are not sufficiently recognisable. If there is any doubt about the contents, it is advisable to consult the internship officer. The practical activities can be carried out in one or more (maximum five) of the following training contents:

- Product development (hardware and software)
- Construction
- Project planning
- Production
- Distribution
- Assembly
- Commissioning
- Operational energy supply
- Service

- Work preparation
- Business organisation
- Information processing
- Procurement
- Logistics
- (other comparable areas possible)

Training companies

Companies in the industry in which the above-mentioned training content is offered and which are approved by Rosenheim Technical University of Applied Sciences. The trainee should be supervised by an experienced engineer.

Report card, internship report

The study-accompanying internship has been successfully completed if the individual practical periods with the prescribed contents have been proven by a certificate from the training centre which corresponds to the model provided by Rosenheim Technical University of Applied Sciences, a proper internship report has been submitted to the Internship Office in due time and this has been assessed as passed by the Internship Officer of the plastics engineering degree programme. The report on the course-related internship is to be submitted as one report after completing the entire internship. The submission and recognition of partial reports is not possible. If several blocks have been completed, the report must contain all blocks.

The reports are to be carried out independently, conscientiously and in a clear form on DIN A4 sheets.

- Forms (available from the Traineeship Office): Cover sheet of general report, certificates, training programme
- Short company portrait
- Description of the activities (the engineering activity must be recognisable!):
  - Detailed description of a thematic focus: tasks, possible preparatory work (e.g. available working materials, literature study, etc.), explanations and results, critical comments and conclusions. Supplement with sketches, drawings or graphical representations. In the case of confidential contents, the presentation

may be based on general contexts / results without showing confidential results. The report is to be written in such a way that another student who is to continue working on the described topic can use it well for familiarisation.

- Short summary of all other topics dealt with.

The following structure is recommended for the report on the study-related internship:

```
1.  Cover sheet (TH template)
2.  Overall structure/ Table of contents
3.  Training course with stamp and signature of the companies (TH-
   template)
4.  Testimonials from the companies
5.  Description of the activities
    5.1 Detailed description of a thematic focus (approx. 10-20
       pages)
        5.1.1   Structure
        5.1.2   Short description of the company with integration in
            which part of the company the internship was completed.
        5.1.3   Task
        5.1.4   Description of the trainee activities with work
           results
        5.1.5   Summary with elaboration of the essential benefit
           for the trainee and for the company
    5.2 For all other topics not described under 5.1, a short (
       approx. 1/2 page) summary (company in which the topic was
       dealt with, task, activity, result).
6.  Bibliography
7.  Declaration to be made by hand with signature
```

Practical courses

The Lectures for Practical Internship PLV1 to PLV3 are listed at the end of this document in the module descriptions.

9 Internationalisation / Study-related stays abroad

The degree programme International Bachelor of Engineering recommends spending an internship semester or a theory semester abroad during your studies. Rosenheim Technical University of Applied Sciences offers support for both projects through the International Office. The following describes how the stay abroad can be integrated into the course of studies.

Mobility window for the internship abroad

The 18-week internship accompanying the studies can be completed at home or abroad. If the study-related internship is to be completed abroad, it is particularly suitable to do it as a practical semester in the 6th semester (mobility window). It is recommended to consult with the representative for the practical semester before taking up an internship abroad.

General information on the internship semester can be found at Internship Office CZ. Information on internships abroad can be found under International Office CZ.

Mobility window for studying abroad

In principle, the study and examination achievements obtained abroad can be credited to the studies at Rosenheim Technical University of Applied Sciences, provided that there are no significant differences with regard to the competences acquired.

In the **study model with a practical semester**, the 7th or 8th semester is recommended for a study semester abroad. These semesters contain many courses that facilitate the recognition of study and examination achievements abroad, amounting to up to 30 ECTS credits per semester.

In the **study model without a practical semester**, the 6th semester is recommended for a study semester abroad. The following is an example of how the study plan can be optimised for a study period abroad. In this example, based on the regular study plan, the practical components of the practical phase P6 are shifted to the practical phases P5 and P7, so that a pure semester abroad is possible. In return, one module of the 5th theory semester is shifted to the 6th theory semester. In order to make it easier to find equivalent modules at the partner university abroad, the module “Measurement and Control Technology” as well as modules from the module group MG-FWPM are chosen.

If the same or similar modules cannot be found at the foreign university, students can propose alternative modules to the examination board.

Note 1:
The creditability of modules taken at foreign universities must be clarified with the examination board **prior** to the stay abroad.

Note 2:
The module group of practical courses (MG-PLV) can usually also be taken in Rosenheim during a stay abroad in the 6th semester, as the courses take place either asynchronously online or as block courses in the last two weeks of March before the start of the lecture period of the summer semester. Please inform yourself about this in advance.

Further information:

- Information on studying abroad can be found at International Office CZ
- Information on the recognition of study achievements from abroad can be found at International Office - Recognition of Study Achievements CZ
- The exchange programme of the programme's partner universities can be researched under Partner universities CZ recherchiert werden.
- Information about a semester abroad as a freemover (i.e. outside the university partnerships of the faculty) can be found here CZ.

10 Content-related, organisational and contractual dovetailing for dual study programmes

The study programme is particularly suitable as a dual study programme with in-depth practice or as a combined study programme. The learning locations of university and company are systematically interlinked in terms of content, organisation and contract.

Contractual interlocking

Rosenheim Technical University of Applied Sciences provides sample contracts for dual studies that are based on the contract templates of hochschule dual. In particular, rights and obligations as well as agreements on the study and practical phases between the dual practice partners and the dual students are stipulated in these contracts. With the concluded contracts, the prospective students apply for a place at Rosenheim Technical University of Applied Sciences, which also creates a contractual relationship between dual students and the university. Furthermore, the companies conclude a cooperation agreement with Rosenheim Technical University of Applied Sciences, which corresponds to the model of the hochschule dual. More detailed information on this, as well as sample contracts and cooperation agreements, can be found on the website CZ of the university.

Content dovetailing

The course of study for dual students alternates between theoretical content at the university and in-depth study through practical application in the company. The following study achievements are made in the partner company:

- Internship: The internship accompanying the course of study, worth 25 ECTS credits, must be completed in the partner company. Associated practical courses (PLV) can be completed in the partner company for up to 5 ECTS credits if offered.
- Bachelor's thesis: The Bachelor's thesis, worth 10 ECTS credits, is completed at the partner company of the dual student. The topic and the content of the work are determined together with the examiners of the Bachelor's thesis at the university.
- Project work: To further interlink the learning locations of company and university, the study plan provides for the preparation of two project papers, each worth 5 ECTS credits, i.e. a total of 10 ECTS credits. The project work is done in the partner company of the dual student. The Supervision and examination are carried out by professors at the university, who are selected according to subject-specific criteria. The subject content of a project work is based on the course content of the respective study section in which

the project work is carried out and is determined in consultation between the company, students and examiners at the university.

Since only one project is compulsory for non-dual students, there are adapted study plans for dual students. In these plans, the coursework that the student completes in his or her partner company is marked in colour. Students have the option of combining two individual project papers into one project paper of corresponding scope. For dual students who work on project work in the company to the extent of 10 ECTS credits, a minimum number of 15 ECTS credits applies with regard to the completion of further study achievements from the module group of the subject-specific compulsory elective modules.

Organisational interlocking

The organisational interlocking of companies and the university takes place in joint committees (university council, industry and business advisory board) and in the working group “Duales Studium”. Further information on this can be obtained from the internship officer of the degree programme.

Information on dual studies for prospective and current students

Prospective students and students can find detailed information about the dual study programme on the website CZ of the university. Information is also provided at information events at the university, e.g. taster days. Prospective students or students can obtain further information from the university’s student advisory service or from the subject-specific student advisory service for the degree programme.

11 Prior knowledge at the start of the programme International Bachelor of Engineering

In the mathematics and physics modules, first-year students on the International Bachelor of Engineering degree programme should have the previous knowledge that corresponds to the teaching content of the technical secondary school. In addition, knowledge of German and English are admission requirements for the degree programme. The following list provides an overview:

Prior knowledge of languages: German language skills at level A2 and English language skills at level B2 according to the CEFR are language admission requirements for the degree programme.

Previous knowledge in mathematics

Elementary algebra
Calculating with brackets, fractions, powers and roots, solving an algebraic equation according to an unknown, solving a quadratic equation

Geometry
Angles in degrees and radians, ray theorems, triangle calculations (Pythagorean theorem, area, angle sum), circle calculations (circumference, area, tangent)

Analytic geometry
Cartesian coordinate system, equation of a straight line and circle, intersection points

Functions
Function definition, function graph, inverse function, polynomial function, power and cube functions, trigonometric functions, exponential and logarithm functions, linear systems of equations with two (three) unknowns.

Vector calculus
Representation of vectors in plane and space, addition and subtraction of vectors Scalar and vector product

Differential and integral calculus
Derivation rules (factor, sum, product, quotient and chain rule), curve discus- sion (zero points, extreme values, turning points, asymptotes), primitive function and main theorem of differential and integral calculus, integration rules

Prior knowledge of physics

Kinematics, Newton's laws, conservation laws of energy and momentum, description of the simple processes from the previously mentioned areas with the help of differential and integral calculus.

12 Ongoing information

Up-to-date information is provided via the **Learning Campus** CZ, the **Community** CZ, the **time table system** CZ Starplan, via the homepage of the study programme . In particular, the information in the Learning Campus, the Community and in StarPlan is to be obtained daily.

- **Learning Campus / Community:** Current announcements and documents for the individual courses
- **StarPlan:** view timetables and receive notifications of timetable, room and lecture changes

Organisational matters at the beginning of the semester

To ensure smooth communication between the secretariat, teachers and students, the students elect a semester spokesperson and a deputy semester spokesperson. Both should be reachable by mobile phone.

13 Contact person

Office:

Ms. Diana Mödl,
Tamara Siegert,
Edda Kremper

Sekretariat

+498031 / 805-4003

sekretariat-cb@th-rosenheim.de
Office opening hours:
Monday to Friday: 8:00 - 12:00

Programme coordination:

Franziska Wohlfart
Room R 2.22
+498031 805- 2843
franziska.wohlfart@th-rosenheim.de

Internship Officer:

Prof. Dipl.-Ing. Johannes Lindner

Room C1.05a
+49 8031 / 805-4024
johannes.lindner@th-rosenheim.de

Representative of the Examination Commission:

Prof. Arno Bücken

Raum C2.03
+49 8031 805 – 4035
arnold.buecken@th-rosenheim.de

Dean of Studies:

Prof. Dipl.-Ing. Johannes Lindner

Room C1.05a
+498031 / 805-4024
johannes.lindner@th-rosenheim.de

14 Module Descriptions

Module name	German B1.1		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR11		1	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Zentgraf	Frau Hausner	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer semester	German / Englisch
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

-

Recommended prerequisites

A2 completed according to CEFR

Intended learning objectives

Advanced language use B1.1 according to CEFR Students will be able to

- Understand frequently used expressions and clear standard language related to study, work and leisure.
- Cope with most everyday situations in the language area
- Express themselves simply and coherently on familiar topics and areas of personal interest
- Report on experiences and events
- Describe hopes and goals
- Give brief reasons and explanations for plans and views.

Content

Level B1.1

- Teaching and examination focus: Speaking and listening comprehension
- Practical language skills for study and everyday life
- Present
- Vocabulary and grammar
- Pronunciation
- Intercultural competence

Recommended literature
• To be announced in the course

Module name	German B1.2		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR12		1	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Zentgraf	Frau Hausner	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer semester	German / Englisch
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

-

Recommended prerequisites

A2 completed according to CEFR

Intended learning objectives

Advanced language use B1.2 according to CEFR Students will be able to

- Understand frequently used expressions and clear standard language related to study, work and leisure.
- Cope with most everyday situations in the language area
- Express themselves simply and coherently on familiar topics and areas of personal interest
- Report on experiences and events
- Describe hopes and goals
- Give brief reasons and explanations for plans and views.

Content

Level B1.2

- Teaching and examination focus: Writing and reading comprehension
- Practical language skills for study and everyday life
- Mails and written communication
- Vocabulary and grammar
- Intercultural competence

Recommended literature
• To be announced in the course

Module name	Mathematics 1.1		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR13	Maths 1.1	1	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Link	Prof. Dr. Link, Dr. Douka	SU	5
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer Semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	54 h	36 h
Applicability of the module in the degree programmes			
IBE			
Mandatory requirements according to examination regulations			
none			
Recommended prerequisites			
General higher education qualification (Abitur), advanced technical college certificate (Fachhochschulreife) or equivalent			
Intended learning objectives			
The aim is to teach and deepen mathematical basics and their applications. The students are then able to formulate practical problems mathematically and solve them by selecting suitable methods. Due to the knowledge of mathematical basics, the students are able to independently deal with more advanced mathematical methods.			
Brief description of the module			
The students master the basics of linear algebra and vector calculus. They know the basics of calculus, can confidently deal with functions of a variable and are proficient in differential and integral calculus in a variable. They can handle and apply complex numbers.			

Content

Lecture:

- Basics
- Linear algebra
- Differential and integral calculus of a variable
- Introduction to complex numbers

Exercises

Exercises accompanying the lectures

Recommended literature

- G. James, P. Dyke: Modern Engineering Mathematics, Pearson, 6th edn. , 2020
- G. James, P. Dyke: Advanced Modern Engineering Mathematics, Pearson, 4th edn. , 2011
- E. Kreyszig,: Advanced Engineering Mathematics, John Wiley & Sons, 10th edn. , 2011

Module name	Physical Chemistry		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBB14	PC	1	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Pentlehner	Dr. Oscar Rojas,	SU	5
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer Semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	75 h	40 h	35 h
Applicability of the module in the degree programmes			
IBB			
Mandatory requirements according to examination regulations			
none			
Recommended prerequisites			
General higher education qualification (Abitur), advanced technical college certificate (Fachhochschulreife) or equivalent			
Intended learning objectives			
The students are familiar with the elementary principles and concepts of general and physical chemistry. Students are able to understand, reproduce and apply the basic concepts and models of chemistry. They are able to fundamentally interpret the influence of physical quantities on chemical reactions. The students have a basic knowledge of the most important concepts in chemistry, which serve as a basis for further chemical subjects. They know the smallest building blocks of chemistry, atoms, the structure of matter and the most important boundary concepts of bonding forms. Furthermore, students can assess the fundamentals of quantum mechanics based on key experiments and the derived consequences. These are a prerequisite for the following discussion of the advantages and limitations of various models of chemical bonding and matter in general. Through an introduction to reaction kinetics, students have a basic understanding of the process of chemical reactions, which serves as the basis for the chemical engineering courses. Based on basic knowledge of thermodynamics, students understand chemical processes and in particular chemical equilibrium and can derive and calculate their targeted influence. The students deepened the content of the lecture by independently working on application-oriented exercises. The students are able to present and discuss their solution approach.			

Content

1. Basics of quantum mechanics and structure of matter
    - Light and waves, atomic spectra, photo effect, Franck-Hertz experiment, wave-particle dualism, Bohr's atomic model, Schrödinger equation, structure of the electron shell and PSE: structure, trends, systematics
2. Chemical bonding and molecules (see also module CI 107)
    - Schrödinger equation for molecules (H2+, H2, ..), LCAO-MO method,
    - Types of bonding (ionic, covalent and metallic bonding)
    - VSEPR, intra- and intermolecular bonds, octet rule, notation, isomerism
    - MO theory and hybridization, heteronuclear bonding • Metallic bonding, metals and semiconductors
3. Introduction to reaction kinetics
    - Terms and definitions
    - Formal kinetics, reactions of different orders
    - Pressure and temperature dependence
    - Methods for determining kinetics (e.g. concentration measurement)
    - Reaction coordinates and profiles, transition state theory, catalysis
4. Introduction to (chemical) thermodynamics
    - Terms and definitions (system, state variables)
    - Reaction enthalpies, standard enthalpies of formation
    - Second law, entropy (statistical and thermodynamic interpretation), entropy of mixture
    - Third law, equilibrium and law of mass action, chemical potential, Le Chatelier
    - free energy and the connection to phase equilibria,
    - Applications, e.g. precipitation, complex formation, acid-base and redox reactions as well as adsorption, extraction and ion exchange processes; Chromatography
    - Interaction of kinetics and thermodynamics

Recommended literature

- Atkins, P. et al. (2006): Chemie. Einfach alles. Wiley-VCH-Verlag
- Atkins, P. (2013): Physikalische Chemie. Wiley-VCH-Verlag, 5. Auflage, ISBN 978-352-7-33247-2
- Mortimer, C. E., Müller, U. (2015): Chemie. Georg Thieme Verlag, 12. Aufl.
- Otto, M.: Analytische Chemie. Wiley-VCH
- Riedel, E. (2013): Allgemeine und Anorganische Chemie. De Gruyter Verlag, 11. Aufl.
- Riedel, E. (2013): Allgemeine und Anorganische Chemie – Übungsbuch. De Gruyter Verlag, 11. Aufl.
- Wedler (2012): Lehrbuch der Physikalischen Chemie (mit Übungsbuch). Wiley-VCH

Module name	Applied Informatics		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR15	AppInf	1	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Klein	Prof. Dr. Klein	SU,Pr	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer Semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	54 h	36 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

none

Recommended prerequisites

none

Intended learning objectives

After successful participation in the course, students are able to

- Understand the basic functioning of a computer
- Understand the computer's internal number representation and use the correct basic data types.
- produce programmes of medium complexity using control structures and functions and observing quality criteria (readability, maintainability and reusability).
- Design and implement algorithms
- use the version management tool Git
- use the C standard library
- analyse and evaluate other people's source code

Brief description of the module

The students learn the basics of procedural programming using the C language. In this context, the basics of computer architecture including memory model and data types are also taught. After successful participation, the students are able to design algorithms and implement programmes using control structures, functions and observing quality criteria.

Content

- Introduction to computer architecture and memory model
- Number systems, coding
- Basic data types and arrays
- Version management using Git
- Control structures
- Functions
- Arithmetic, bitwise and Boolean operators
- C standard library

Recommended literature

- B. Kernighan, D. Ritchie: Programmieren in C. ANSI C, Carl Hanser, 2.Auflage, 1990
- H. Erlenkötter: C:Programmieren von Anfang an, Rowohlt Taschenbuch, 25.Auflage, 1999
- A. Böttcher, F. Kneißl: Informatik für Ingenieure, Oldenbourg Verlag, 3.Auflage, 2012

Module name	Engineering Mechanics 1: Statics		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR16	Statics	1	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Schinagl, Prof. Dr. Wagner	Prof. Dr. Schinagl, Prof. Dr. Wagner	SU, Ü	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	54 h	36 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

none

Recommended prerequisites

Knowledge of mathematics and physics according to the contents of the FOS-Technology course or the Abitur (A-levels).

Intended learning objectives

After successful participation in the module courses, students are able to

- apply engineering-recognised methods of rigid-body statics to analyse technical components and assemblies under point and distributed loads with regard to internal and external forces, moments and their local curves.
- structure practical technical-mechanical systems.
- use the mathematical relationships generated with it for calculations.
- understand important special cases and apply the methods learned to them.
- document the methodical procedure for solving problems from structural analysis in a form-appropriate and comprehensible manner.

Brief description of the module

The course “Statics” is the first and essential part of technical mechanics. Here, the basics and methods for the calculation of internal and external forces and moments on static single and multi-body systems are taught. These basics are based on the equilibrium of forces and moments, which leads to mathematical equations and their solution via the free-cutting method. Important special cases, such as surface or wrap-around friction or distributed loads, are taken into account. Statics forms the basis for many other engineering fields and teaching modules.

Content

- Terms, basic laws, basic tasks of statics
- Central, plane force system
- Force, force couple and moment of a force
- Resultant force of a non-central planar force system
- Stock reactions
- Spatial force system
- Focus
- Internal forces and moments, internal force curves also under distributed loads
- Friction

Recommended literature

- Skript and Formulary
- M.Mayer: Technische Mechanik, Carl Hanser, 9th Edition, 2021
- D.Gross, W.Hauger, J.Schröder, W.A.Wall: Technische Mechanik 1:Statik, Springer Vieweg, 14th Edition, 2019
- C. Eller: Holzmann/Meyer/Schumpich Technische Mechanik Statik, Springer Vieweg, 15th Edition, 2018
- R.C. Hibbeler: Engeneering Mechanics: Statics, Pearson, 15th Edition, 2022
- D. Gross et. Al.: Statics – Formulas and Problems: Engineering Mechanics 1, Springer, 1st Edition, 2022

Module name	German B2.1		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR21		2	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Zentgraf	Frau Hausner	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Winter semester	German / English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

-

Recommended prerequisites

B1 completed according to CEFR

Intended learning objectives

Independent language use B2 according to CEFR Students can

- Understand the main contents of complex texts on concrete and abstract topics and on technical discussions in their own field of specialisation.
- Communicate so spontaneously and fluently that a conversation with a native speaker is possible without much effort on either side.
- Express themselves on a wide range of topics
- Explain a point of view on a current issue and state the advantages and disadvantages of different options.

Content
Level B2.1 • Teaching and examination focus: Speaking and listening comprehension • Practical language skills for study and everyday life • Present • Pronunciation • Vocabulary and grammar • Intercultural competence
Recommended literature
• To be announced in the course

Module name	German B2.2		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR22		2	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Zentgraf	Frau Hausner	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Winter semester	German / English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

-

Recommended prerequisites

B1 completed according to CEFR

Intended learning objectives

Independent language use B2 according to CEFR Students can

- Understand the main contents of complex texts on concrete and abstract topics and on professional discussions in their own field of specialisation.
- Communicate so spontaneously and fluently that a conversation with a native speaker is possible without much effort on either side.
- Express themselves on a wide range of topics
- Explain a point of view on a current issue and state the advantages and disadvantages of different options.

Content

Level B2.2

- Teaching and examination focus: Writing and reading comprehension
- Practical language skills for study and everyday life
- Writing an internship report
- Vocabulary and grammar
- Intercultural competence

Recommended literature
• To be announced in the course

Module name	Mathematics 1.2		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR23	Maths 1.2	2	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Link	Prof. Dr. Link, Dr. Douka	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Winter Semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	54 h	36 h

Applicability of the module in the degree programmes
IBE
Mandatory requirements according to examination regulations
none
Recommended prerequisites
General higher education qualification (Abitur), advanced technical college certificate (Fachhochschulreife) or equivalent
Intended learning objectives
The aim is to teach and deepen mathematical basics and their applications. The students are then able to formulate practical problems mathematically and solve them by selecting suitable methods. Due to the knowledge of mathematical basics, the students are able to independently deal with more advanced mathematical methods.
Brief description of the module
The students master the basics of linear algebra and vector calculus. They know the basics of analysis, can confidently deal with functions in several variables and are proficient in differential and integral calculus in several variables. Furthermore, the students are able to apply the basic integral transformations and the corresponding inverse transformations to elementary functions.

Content
Lecture: • Basics • Linear algebra • Differential and integral calculus in several variables • Integral transformations Exercises Exercises accompanying the lectures
Recommended literature
• G. James, P. Dyke: Modern Engineering Mathematics, Pearson, 6th edn. , 2020 • G. James, P. Dyke: Advanced Modern Engineering Mathematics, Pearson, 4th edn. , 2011 • E. Kreyszig,: Advanced Engineering Mathematics, John Wiley & Sons, 10th edn. , 2011

Module name	**Physics 1**		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR24	Physics 1	2	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Stanzel	Prof. Dr. Stanzel	SU,Pr	5
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Winter Semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	56 h	70 h	24 h
Applicability of the module in the degree programmes			
In IBE			
Mandatory requirements according to examination regulations			
none			
Recommended prerequisites			
Mathematics and science school education: • Knowledge of vector calculus (understanding the meaning of scalar and vector product) • Be able to carry out a curve discussion of simple functions • Understand the meaning of integration and differentiation of simple functions, be able to perform differentiation and integration of simple functions. • Understand and calculate exponential and logarithm functions • Understand and calculate trigonometric functions (sin, cos, tan) • Be able to solve linear and quadratic equations			

Intended learning objectives

After successful participation in the seminar-based teaching, students will be able to …

- Calculate safely with physical quantities and units including prefixes and powers and include them in all calculations.
- Understand and confidently apply the basic kinematic relationships between displacement, velocity and acceleration in translation and circular motion.
- Define the fundamental concept of force and describe the types of force.
- Use Newton's laws confidently and understand them as an important tool in solving problems.
- Understand and distinguish between the concepts of work, energy and power and apply the mechanical law of conservation of energy when solving problems.
- Set up the equation of motion of the one-mass oscillator for the free, damped and forced case and to discuss and interpret the different solution.
- Get to know different forms and realisations of oscillatory systems including damping and excitation mechanisms.
- Understand the phenomenon of resonance in forced oscillation in particular and understand and interpret the meaning of the amplitude resonance curve (amplitude frequency response).
- Name and distinguish thermal state and process variables.
- Calculate changes of state of the ideal gas and reproduce them in p-V diagrams.
- Name the main laws of thermodynamics and apply them to the evaluation and calculation of thermal processes.
- Safely consider heat capacities, phase transformations and heat transport mechanisms in calculations.
- Comprehend the principle of thermal plants based on circular processes.

Furthermore, after successful completion of the internship, students are able to …

- Independently understand the physical relationships in the context of the subject area.
- Perform uncertainty assessments safely.
- Plan experiments and record measurement data as well as evaluate, critically question and scientifically document the results obtained.
- Support each other through teamwork and to have professional discussions.

Brief description of the module

The module consisted of the blocks Size Units Uncertainty Test, Kinematics, Dynamics 1 (Translation), Vibration and Fundamentals of Thermodynamics. Accompanying the lecture, practical experiments are carried out for the subject area of quantities - units - uncertainty - experiment, for the understanding of the kinematic quantities velocity and acceleration as well as for the understanding of mechanical resonance and thermodynamics.

Content

Quantities, units, measurement and evaluation
Physical quantities, units, orders of magnitude, significant digits, measurement uncertainties, calculating with uncertainties, compensation line, linearisation

Kinematics
Definition and relationship of displacement, velocity and acceleration as vectorial quantities, special cases: rectilinear and circular motion

Dynamics 1
Concept of force and Newton's axioms, examples of forces, work, energy, power, efficiency, mechanical law of conservation of energy

Oscillations Setting up the equation of motion of the single-mass oscillator for the free, damped and forced case including discussion and interpretation of the solution, examples of oscillatory systems including damping and excitation mechanisms, resonance, amplitude resonance curve (amplitude frequency response), phase shift (phase frequency response).

Basics of thermodynamics
Thermal state and process variables, heat capacity, ideal gas, main laws of thermodynamics, cyclic processes, phase transformations, heat transport

Recommended literature

- P. A. Tipler, G. Mosca: Physics for Scientists and Engineers, W. H. Freeman, 6. Auflage , 2007

Module name	Technical Drawing and CAD		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR25.1	TZ-CAD	2	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Meierlohr, Prof. Dr. Reuter	Prof. Dr. Meierlohr, Prof. Dr. Reuter	SU,Ü	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Winter semester	English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	54 h	36 h

Applicability of the module in the degree programmes

The module can be used/compulsory in the International Bachelor of Engineering degree programme. Overall, the students are given an overview of the topics in general mechanical engineering in the course of the lecture. The interaction of different engineering disciplines (e.g. mechanics, machine elements, manufacturing processes, materials technology, assembly technology, quality management, design and product development) is dealt with in particular. The system-technical insight gained creates the interdisciplinary prerequisite for the prospective engineers to understand the product life cycle (interdisciplinary development, production, operation and utilisation) of products and machines holistically.

Mandatory requirements according to examination regulations

none

Recommended prerequisites

Intended learning objectives

The students are able to specify and document components and assemblies in the form of hand sketches and technical drawings. The students are able to design components and assemblies with the help of a 3D CAD programme and to derive standard-compliant drawings from them. The students can

- transfer spatial facts into the two-dimensional drawing plane
- read and create standardised technical drawings,
- correctly and unambiguously specify basic functional requirements (e.g. fits, surfaces, edges) in technical drawings,
- Generate standardised parts lists,
- create axonometric freehand drawings of components,
- abstract technical sketch

Students learn the efficient use of a modern 3D CAD system and can

- Model sketch-based 3D bodies (turned and milled parts),
- create assemblies from several 3D bodies,
- derive standard-compliant production drawings of individual parts.

Brief description of the module

The course serves to learn the basics of design with a focus on the functionally unambiguous specification and communication of the component design as well as learning a modern 3D CAD system.

Content

Lecture Technical Drawing

- Structure and content of technical drawings
- Construction standards
- Projection drawing
- Representation of individual parts and groups
- Dimensioning, tolerances, fits, edge conditions
- Representation of standard machine elements
- Marking of weld seams Exercise

Technical drawing

- Two-dimensional and axonometric freehand drawing
- Standard-compliant technical drawing and specification
- Mapping of constructive elementary functions (fits, surfaces, edges)
- Specification of functional and production tolerances
- Construction skeletons using concrete product examples

Generation of solids and assemblies, as well as creation of drawings with the aid of a 3D CAD system, in particular:

- Possible uses of CAD programmes, market overview
- Sketching technique, geometric and dimensional conditions
- Functions for creating and removing material
- Model structure
- Module functions
- Drawing derivation

Recommended literature

- Normen DIN et al, Berlin, Beuth Verlag
- Lecture notes for the course
- Online help for the CAD programme
- Video Tutorial, Learning Campus, TH Rosenheim (in German)
- H. Hoischen, A. Fritz, et al.: Technisches Zeichnen, Carl Hanser, 37th Edition, 2020
- R. Gomeringer, et al.: Tabellenbuch Metall, Verlag Europa-Lehrmittel, 48th Edition, 2019
- R. Hanifan: Perfecting Engineering and Technical Drawing : Reducing Errors and Misinterpretations, Springer, 1st Edition, 2014
- S. Tornincasa: Technical Drawing for Product Design : Mastering ISO GPS and ASME GD&T, Springer Nature, 1st Edition, 2020

Module name	Basic Chemistry		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR25.3	Chem.	2	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Larbig	Prof. Dr. Larbig	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
schrP	1 Semester	Winter Semester	english
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h
Applicability of the module in the degree programmes			
IBE			
Mandatory requirements according to examination regulations			
none			
Recommended prerequisites			
Intended learning objectives			
The students understand the structure of atoms and the formation of the different types of chemical bonds. The students can apply different atomic and molecular models to practical tasks. Simple redox equations can be created independently. Electrochemical concepts can be applied to galvanic cells and to issues related to corrosion and corrosion protection.			
Brief description of the module			
In this module students receive knowledge of basic concepts in chemistry, including atomic models, theories of chemical bonds, electrochemistry and redox equations.			

Content
Basics of chemistry • Atomic models and the chemical bond • Intermolecular forces • chemical reactions and stoichiometry • Fundamentals of organic chemistry Metals and electrochemistry Redox equations Electrochemical series • galvanic cells • Corrosion and protection against corrosion • Electrochemistry

Recommended literature
• lecture notes

Module name	Technical German 1 – B2/C1		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR31		3	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Zentgraf	Frau Hausner	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
see SPO	1 Semester	Summer Semester	German / English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

-

Recommended prerequisites

Level B2 according to CEFR or higher

Intended learning objectives

Proficient use of language Level B2/C1 according to CEFR Students can

- Understand a wide range of demanding texts
- Express themselves spontaneously and fluently without searching for clearly recognisable words more often
- Use the language in study, social and professional life
- Express themselves clearly and in a structured way on complex issues, using different means of linking text.

Content

- Practical language skills for studying
- Oral forms of examination in German
- Technical Language German for Engineers

Recommended literature
• M. Steinmetz, H. Dintera: German for Engineers, Springer Vieweg, 2nd edition, 2018

Module name	Technical German 2 – B2/C1		
Number(s)	**Abbreviation**	**Curriculum semester**	**ECTS**
IBR32		3	5
Responsible for the module	**Lecturer(s)**	**Teaching form**	**SWS**
Prof. Dr. Zentgraf	Frau Hausner	SU	4
Form of examination	**Module duration**	**Module rotation**	**Language**
siehe SPO	1 Semester	Summer Semester	German / English
Total workload	**= Presence**	**+ Self-study**	**+ Exam preparation**
150 h	60 h	60 h	30 h

Applicability of the module in the degree programmes

IBE

Mandatory requirements according to examination regulations

-

Recommended prerequisites

Level B2 according to CEFR or higher

Intended learning objectives

Proficient use of language Level B2/C1 according to CEFR Students can

- Understand a wide range of demanding texts
- Express oneself spontaneously and fluently without searching for clearly recognisable words more often
- Use the language in study, social and professional life
- Express themselves clearly and in a structured way on complex issues, using different means of linking texts.

Content

- Practical language skills for studying
- Written forms of examination in German
- German for Engineers

Recommended literature

- M. Steinmetz, H. Dintera: German for Engineers, Springer Vieweg, 2nd edition, 2018
- Further materials will be announced in the course