

# Module Handbook

B.Eng. ENGINEERING AND MANAGEMENT

Faculty of Engineering and Management

Study and examination regulation SS 15

as of: 31.07.2026

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# 1 Overview

|                                 |                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Name of the program</b>      | Engineering and Management                                                                             |
| <b>Study type &amp; degree</b>  | Bachelor of Engineering (full time)                                                                    |
| <b>First start date</b>         | WS 15/16; Start only in winter semester                                                                |
| <b>Standard period of study</b> | 7 Semesters (210 ECTS, 148 SWS)                                                                        |
| <b>Study location</b>           | THI-Campus in Ingolstadt                                                                               |
| <b>Language of instruction</b>  | English                                                                                                |
| <b>Cooperation</b>              | None                                                                                                   |
| <b>Admission requirement</b>    | University entrance qualification                                                                      |
| <b>Capacity</b>                 | 55 students p.a.                                                                                       |
| <b>Program director</b>         | Prof. Dr. Andrea Eisenberg<br>Tel.: +49 841 9348-3525<br>Raum: N112<br>E-Mail: Andrea.Eisenberg@thi.de |

## 2 Introduction

The text describes the current state of the program modules in the bachelor's degree "Engineering and Management" according to its Study and Examination Regulation (German: SPO "Studien- und Prüfungsordnung").

The course description (German: "Modulhandbuch") provides the objectives and content of the individual compulsory modules and a breakdown of SWS (semester hours per week) per module and semester.

## 2.1 Objectives

The Bachelor of Engineering program “Engineering and Management” of Technische Hochschule Ingolstadt addresses students who intend to work for international companies in functions that require both, an engineering background as well as a thorough understanding of management practices.

The objective of the bachelor's degree "Engineering and Management" is to teach the expertise, methodological competence and social skills that enable students to independently apply scientific findings and methods and to act responsibly in the workplace and society in the occupational field of industrial engineering. Graduates are to be qualified to take on tasks in international enterprises and/or cross-border tasks.

## 2.2 Admission Requirements

The student's eligibility for the Bachelor's degree "Engineering and Management" is demonstrated by evidence of the general conditions according to the Ordinance on the Eligibility for Studying at the Universities of the Free State of Bavaria and the State-Recognized Non-State Universities (Eligibility Ordinance - QualV) of 2nd November 2007 (Law and Order Gazette 2007, p. 767, Bavarian Collection of Laws 2210-1-1-3-UK/-WFK) in its current version.

The binding regulations for this curriculum can be found in:

- Study and Examination Regulations (SPO) for the Bachelor's degree program "Engineering and Management" (B. Eng.) as of 24.11.2014.
- „Allgemeine Prüfungsordnung" (APO) of Technische Hochschule Ingolstadt.
- „Immatrikulationssatzung" of Technische Hochschule Ingolstadt.

The sequence of studies is influenced by the regulations of the Study and Examination Regulations ("Studien- und Prüfungsordnung").

## 2.3 Preliminary internship

The study program requires a preparatory internship (German: “Vorpraxis”) of at least 6 weeks, which must be completed before the start of the 4th semester (during semester breaks).

The preparatory internship is not part of our admission requirements.

## 2.4 Target Group

The program addresses prospective students,

- who would like to work as engineers at the interface between technology and business administration.
- who are enthusiastic about the development, production, purchasing and sales of products and services.
- with interest in interdisciplinary studies at the interface of technology, economy and sociology with a strong focus on the current state of foresight research and challenges of the future.
- that prefer a master's program fully taught in English, like to gain intercultural experience and go for an international career at home and abroad.

## 2.5 Structure of the program

The standard period of study is seven semesters. The course is divided into two study sections. The first part of the course comprises two theoretical semesters. The second part of the program comprises four theoretical and one practical semester, which is the fifth semester.

The practical training or preliminary work according to §9 of the THI matriculation statute is required.

The following figure shows the curriculum.

| 1. Semester                  |                                 |                                             |           |
|------------------------------|---------------------------------|---------------------------------------------|-----------|
| Mathematics 1                | Computer Science                | Material Science                            |           |
| Business Administration      | Start-Up Project                | Foreign Language 1                          |           |
| 2. Semester                  |                                 |                                             |           |
| Mathematics 2                | Mechanical Design 1             | Physics                                     |           |
| Financial Accounting         | Production Systems              | Foreign Language 2                          |           |
| 3. Semester                  |                                 |                                             |           |
| Software Development         | Engineering Mechanics           | Mechanical Design 2                         |           |
| Cost Accounting              | Automation Technologies         | Foreign Language 3                          |           |
| 4. Semester                  |                                 |                                             |           |
| Electrical Engineering       | Power Engineering               | Controlling                                 |           |
| Marketing                    | Production Planning & Logistics | Selected Topics in International Management |           |
| Business Information Systems |                                 |                                             |           |
| 5. Semester                  |                                 |                                             |           |
| Industry Internship          |                                 | Seminar                                     |           |
| 6. Semester                  |                                 |                                             |           |
| Intercultural Studies        | Project                         | Project- and Quality-Management             | Electives |
| 7. Semester                  |                                 |                                             |           |
| Electives                    | Seminar                         | Bachelor's Thesis                           |           |

In the first two semesters, the modules are offered in both English and German. Each student is free to choose which modules they attend.

An overview of the German-language modules can be found in the table below:

| Nr. | Module (English)           | Module (German)                              |
|-----|----------------------------|----------------------------------------------|
| 1.  | Mathematics 1              | Mathematik 1                                 |
| 2.  | Mathematics 2              | Mathematik 2                                 |
| 3.  | Selected Topics in Physics | Physik                                       |
| 4.  | Computer Science           | Ingenieurinformatik                          |
| 5.  | Mechanical Design 1        | Technische Mechanik 1                        |
| 6.  | Material Science           | Werkstofftechnik                             |
| 7.  | Business Administration    | Allgemeine Betriebswirtschaftslehre und VWL  |
| 8.  | Financial Accounting       | Bilanzierung                                 |
| 9.  | Production Systems         | Produktionstechnik                           |
| 10. | Start-up Project           | Projekt Führung und Gründung von Unternehmen |

For the German-language module descriptions, please refer to the module handbook for the Bachelor's degree program in "Wirtschaftsingenieurwesen" (B-WI).

## 2.6 Prerequisites for advancement

Only students who have earned at least 42 ECTS credit points from the modules in the first part of the course are entitled to enter the second part of the course.

Only students who have achieved a grade of "sufficient" or higher in all the examinations and essential assessments done during the course in the first part of the course and have earned at least 20 ECTS credit points from the compulsory modules in the second part of the course are entitled to enter the practical studies semester.

## 2.7 Industry internship

The practical studies semester in the second part of the course lasts 20 weeks and is accompanied by classes.

The practical studies semester must be completed in a non-German speaking foreign country. Alternatively, the practical studies semester may be completed in German-speaking countries if a connection to international business is guaranteed (e.g., through work in the areas of international product management, global product development, international marketing, international production and logistics).

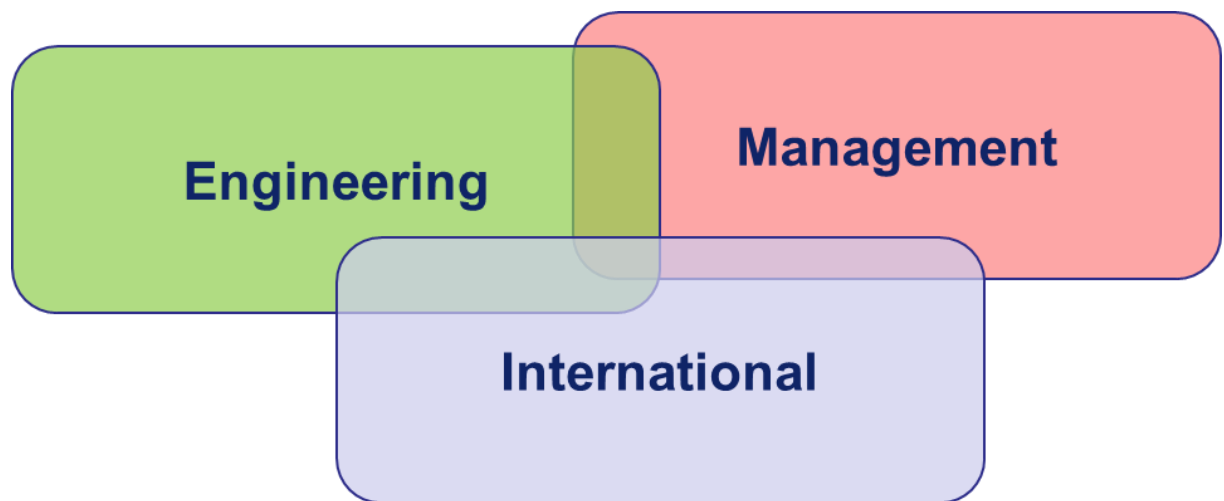
## 2.8 Concept

The program was established in the winter term 2015/2016.

The concept was built on the already well-established German-speaking course “Wirtschaftsingenieurwesen”. In addition, international aspects were included.

### 3 Qualification Profile

The program provides sound engineering education with modules such as engineering mechanics, material sciences, mechanical design, computer science, mathematics, software development and electrical engineering. Besides, the above-mentioned job requirements regarding management know-how are met by lectures such as accounting, marketing and controlling. In addition to those competencies, “soft skills” are trained, e.g., by team projects and student presentations.

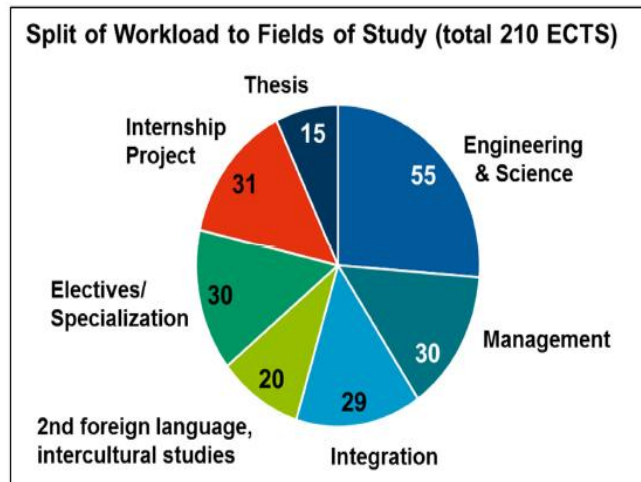


The studies also prepare students for international projects and positions. Specific modules such as “Intercultural studies”, “Selected topics in international management” and a second foreign language are part of the curriculum.

Students gain further international exposure by studying abroad at one of our partner universities. Internships, which are scheduled during the 5th semester, help to gain work experience as well as business contacts that may lead to future employment.

Last-but-not-least, lectures are taught in English - the language of international business. While attending lectures taught in the English language, students are encouraged to learn German as their second foreign language (courses scheduled during semesters 1, 2 and 3).

The total workload amounts to 210 ECTS. The curriculum consists of seven fields of study:



### 3.1 Mission Statement

The program integrates the guiding principle of teaching in the following way:

*We prepare our students for the challenges of the future:*

- It is an interdisciplinary program, which enables students to develop future-oriented solutions for interdisciplinary challenges.
- It qualifies students to help shape social changes such as the digital transformation and technological change. It sensitizes students to the sustainable use of the environment and resources, to socially responsible behavior and to social commitment.
- Personal development and team skills at the interface between technology and business are actively challenged and promoted.

*We enable our students to develop solutions to problems based on scientific knowledge:*

- High share of engineering modules in the curriculum, especially in the first stage of study.
- Technical and methodological competence in both technical and management modules in both study parts.
- Team skills and social skills are developed at the interface between technology and management, through internships, project work, elective modules and general scientific modules.

*We open outstanding regional and international perspectives for our students:*

- The bachelor program is fully taught in English, addresses international students and creates intercultural competences.
- In this way, the program contributes to a cosmopolitan, international campus.
- Our numerous cooperations with companies in the region enable our students to start their careers in the best possible way, both regionally and internationally.

*We help all students discover and realize their individual potential:*

- the bachelor program is international and intercultural. Hence, the program promotes performance in an appreciative cooperation. We meet each other with tolerance and openness and understand diversity as an opportunity to learn from each other and develop further.
- through the individual dialogue with lecturers, consisting of professors from the TH Ingolstadt and selected lecturers from research and industry.

**3.2 Study Objectives**

### 3.2.1 Subject-specific Competencies

The students acquire in-depth knowledge in the areas of engineering and management.

The studies also prepare students for international projects and positions. Specific modules such as “Intercultural studies”, “Selected topics in international management” and a second foreign language are part of the curriculum.

### 3.2.2 Interdisciplinary Competencies of the Study Program

#### **Methodical competences:**

The graduates are able:

- to work scientifically.
- to plan, compile and lead projects.
- to analyze interdisciplinary problems, to recognize comprehensive correlations, to transfer learned competences to new tasks and to evaluate the technical, economic and social impact of compiled solutions.

#### **Social competences:**

The graduates are able:

- to compile complex tasks in cross-functional and international teams, to solve conflicts in teams and to lead teams.
- to speak English fluently (incl. technical terms) and to react sensitively in intercultural affairs.
- to communicate their competences and to communicate generally.
- to convince and to become accepted.

#### **Self-competences:**

The graduates are able:

- to organize themselves and to manage their time.
- to have analytical and outcome-oriented intellectual power.
- to work target-oriented and autonomously.
- to present their results and themselves.

### 3.2.3 Examination Concept of the Program

The modules / examination subjects are specified in accordance with the curriculum including the type of examination and, in addition to written examinations, mainly consist of study work with colloquium, practical work, seminar work, project work, presentation and oral examination. The technical and business modules of the first part of the course are usually examined in writing.

When developing the course, care was taken to ensure that a sensible mix of different types of exams is used. The triad of technology - business - interdisciplinary also forms the framework for the exams.

| Module                                      | Form of examination |
|---------------------------------------------|---------------------|
| Mathematics 1                               | schrP               |
| Computer Science                            | schrP               |
| Physics                                     | schrP               |
| Business Administration                     | schrP               |
| Start-up project                            | PA                  |
| Foreign Language 1 (German or English)      | LN                  |
| Mathematics 2                               | schrP               |
| Mechanical Design 1                         | schrP               |
| Material Science                            | schrP               |
| Financial Accounting                        | schrP               |
| Production Systems                          | schrP               |
| Foreign Language 2 (German or English)      | LN                  |
| Software Development                        | schrP               |
| Engineering Mechanics                       | schrP               |
| Mechanical Design 2                         | SA                  |
| Cost Accounting                             | schrP               |
| Automation Technology                       | schrP               |
| Foreign Language 3 (German or English)      | LN                  |
| Electrical Engineering                      | schrP               |
| Power Engineering                           | schrP               |
| Controlling                                 | schrP               |
| Marketing                                   | schrP               |
| Selected Topics in International management | mdIP                |
| Production Planning and Logistics           | schrP               |
| Industry Internship                         | PrB                 |
| Seminar                                     | LN                  |
| Project and quality management              | schrP               |
| Intercultural Studies                       | StA                 |
| Business Information Systems                | schrP               |

|                                         |                            |
|-----------------------------------------|----------------------------|
| Project                                 | PA                         |
| <b>Module</b>                           | <b>Form of examination</b> |
| Electives in Engineering and Management | 6 LN                       |
| Bachelor Thesis Seminar                 | Koll                       |
| Bachelor Thesis                         | BA                         |

### 3.2.4 Practical relevance of the program

All lecturers have a long-standing background in industry and / or an above-average academic qualification. The methods learned are used in projects in the following semesters. In addition, the practical semester, and a Bachelor thesis, usually written in cooperation with industry, ensure the application relevance.

### 3.2.5 Contribution of individual modules to the objectives of the program

| Module                  | Professional competences | Methodological competences | Social competences | Personal competences |
|-------------------------|--------------------------|----------------------------|--------------------|----------------------|
| Mathematics 1           | ++                       | +                          | o                  | o                    |
| Computer Science        | ++                       | +                          | o                  | o                    |
| Mechanical Design 1     | +                        | ++                         | o                  | +                    |
| Business Administration | +                        | ++                         | +                  | o                    |
| Start-up project        | +                        | +                          | ++                 | ++                   |
| Foreign Language 1      | o                        | ++                         | ++                 | o                    |
|                         |                          |                            |                    |                      |
| Mathematics 2           | ++                       | +                          | o                  | o                    |
| Physics                 | ++                       | +                          | o                  | o                    |
| Material Science        | ++                       | +                          | o                  | o                    |
| Financial Accounting    | ++                       | ++                         | o                  | o                    |
| Production Systems      | +                        | +                          | o                  | +                    |
| Foreign Language 2      | o                        | ++                         | ++                 | o                    |
|                         |                          |                            |                    |                      |
| Software Development    | +                        | ++                         | o                  | +                    |
| Engineering Mechanics   | +                        | ++                         | o                  | +                    |
| Mechanical Design 2     | +                        | ++                         | o                  | +                    |
| Cost Accounting         | +                        | ++                         | o                  | o                    |
| Automation Technology   | ++                       | ++                         | o                  | o                    |
| Foreign Language 3      | o                        | ++                         | ++                 | o                    |
|                         |                          |                            |                    |                      |
| Electrical Engineering  | ++                       | ++                         | o                  | o                    |
| Power Engineering       | ++                       | ++                         | o                  | o                    |

| Module                                      | Professional competences | Methodological competences | Social competences | Personal competences |
|---------------------------------------------|--------------------------|----------------------------|--------------------|----------------------|
| Controlling                                 | +                        | ++                         | o                  | +                    |
| Marketing                                   | +                        | +                          | ++                 | ++                   |
| Selected Topics in International management | +                        | ++                         | o                  | +                    |
| Production Planning and Logistics           | +                        | ++                         | +                  | +                    |
|                                             |                          |                            |                    |                      |
| Industry Internship                         | +                        | +                          | ++                 | ++                   |
| Seminar                                     | +                        | ++                         | +                  | ++                   |
| Project and quality management              | +                        | ++                         | +                  | o                    |
|                                             |                          |                            |                    |                      |
| Intercultural Studies                       | o                        | +                          | ++                 | ++                   |
| Business Information Systems                | +                        | +                          | o                  | +                    |
| Project                                     | +                        | +                          | ++                 | ++                   |
| Electives in Engineering and Management     | ++                       | ++                         | ++                 | ++                   |
|                                             |                          |                            |                    |                      |
| Bachelor Thesis Seminar                     | +                        | ++                         | o                  | ++                   |
| Bachelor Thesis                             | +                        | ++                         | ++                 | ++                   |

### 3.3 Possible professional fields

The program is designed to allow graduates to succeed in inter-disciplinary jobs in an international environment. Graduates of this program are in great demand. There is a wide field of application in specialist or management roles in national or international companies and organizations.

Graduates are especially well prepared to take on specialist and management roles in the following areas:

- International Product Manager
- Cost Engineer
- Industrial Engineer, especially for companies with international production network
- Manager International Project
- Strategic Purchasing Manager
- Assistant to board member
- International Sales Manager, esp. for high-tech products
- Management Consultant
- Team leads global functions, e.g., purchasing, IT, planning.

## 4 Dual Studies

In cooperation with selected industry partners, the study program can also be completed in dual studies model. The dual study model is offered as a study program with in-depth practice, in which the regular study program is supplemented by intensive practical phases in a company. It is also offered as „Verbundstudium“ (combined dual study program), which combines university studies with a regular vocational training/apprenticeship.

In dual study model, academic and practical phases (especially during semester breaks and for the final thesis) regularly alternate during study. The lecture times in the dual study model correspond to the standard study and lecture times at the THI.

By having a significantly longer practical period, by benefitting from a linking of corporate topics with the contents of selected modules and by attending modules adapted specifically to the needs of dual study programs, students develop strong general practical competencies but also company-, domain- and sector-specific competencies. Additionally, to subject matter competencies also elements of personal development such as an assertive presence, presenting, working in teams and organizing work are trained and promoted in this study program. Thereby, graduates of this study program adapt more easily and fast to divisions, projects and processes of companies.

The curriculum of the two dual degree program models differs from the regular degree program concept in the following points:

- **Preliminary practice and practical semester in a cooperating company**  
In both dual study models, the preliminary practice for the study program and the practical semester are carried out in the cooperating company.
- **Dual modules**  
Separate FW subjects are regularly offered for dual students in the degree program. These courses are held at the university or a dual partner. Separate projects and separate practical seminars are also offered for dual students. Projects and practical seminars can be credited for competencies acquired outside of the university in the company as a place of learning. Where possible, individual courses are held by lecturers from cooperation companies.
- **Final thesis for the cooperation company**  
In both dual study models, the final thesis is written at a cooperating company, usually on a practice-relevant topic related to the focus of study.

Organizationally, the two dual degree program models are characterized by the following components:

- **Introductory track**  
As part of the obligatory introductory week at the beginning of the program, a separate event is offered for dual degree students.
- **Mentoring**  
The central contact persons for dual students in the faculty are the respective program head of studies. They organize an annual mentoring meeting with the dual students of the respective study program.
- **Quality management**

In the evaluation and surveys at the THI on the quality assurance of dual study separate question blocks are included.

• „**Forum dual** “

Organized by the Career Service and Student Counseling (CSS), the “Forum Dual” takes place once a year. The “Forum dual” promotes the professional-organizational exchange between the dual cooperation partners and the faculty and serves to ensure the quality of the dual study programs. All cooperation partners in the dual study program as well as representatives and dual students of the faculty are invited to the meeting.

Formal-legal regulation for dual studies for all degree programs of the THI is regulated in the APO (see §§ 17, 18 und 21) and the enrollment statutes (see §§ 8b und 18).

According to the above description, the following modules are different for dual students:

- Start-Up Project (5 ECTS)
- Marketing (5 ECTS)
- Production Planning and Logistics (5 ECTS)
- Project- and Quality-Management (5 ECTS)
- Project (5 ECTS)
- Praxis-Reflexion für Dual-Studierende (FW) (2,5 ECTS)
- Strategic Management (FW) (5 ECTS)
- CAD/CAM für Zerspanung, 3D-Druck und Robotik (FW) (5 ECTS)
- Digital Factory Basics (FW) (5 ECTS)
- Qualitätssicherung (FW) (5 ECTS)
- Internship (24 ECTS)
- Bachelor Thesis Seminar (3 ECTS)
- Bachelor Thesis (12 ECTS)

More detailed description can be found in the corresponding module description.

## 5 Description of Modules

## 5.1 Compulsory Modules

## Mathematics 1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MA1_EGM_E                   | Reg.-Nr.           | 1          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Engineering and Management  | Compulsory Subject | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | only winter term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Schlickewei, Ulrich         |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Schlickewei, Ulrich         |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5 ECTS / 5 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Contact hours               | 58 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Self-study                  | 67 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mathematics 1               |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                    |            |
| <p>After attending the lecture, students are able to:</p> <ul style="list-style-type: none"><li>recognize which questions in engineering sciences can be tackled by mathematical methods and are able to post such questions themselves.</li><li>understand the logical way of reasoning, distinguish between a premise, a consequence, and a rule, and, furthermore, are able to build a line of argument within engineering applications.</li><li>recognize known types of problems both in familiar and in new contexts, can solve such problems using known methods.</li><li>understand the mathematical language used in the engineering literature and are able to describe in both oral and written form their own reasoning and solution approaches.</li><li>be confident in handling the introduced mathematical methods.</li></ul> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                    |            |
| <ul style="list-style-type: none"><li>Complex numbers: basics, rules, applications</li><li>Sequences and series: basics, convergence, applications</li><li>Functions: basics, continuity, applications</li><li>Differentiation in R: basics, rules, applications</li><li>Integration in R: basics, methods of integration, applications</li><li>Ordinary differential equations: basics, solution methods, applications</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |

## Literature

- STRANG, Gilbert, 2010. *Calculus*. Wellesley, Mass.: Wellesley-Cambridge Press. ISBN 978-0-9802327-4-5
- STEWART, James, 2016. *Calculus*. Belmont, Calif.: Thomson Brooks/Cole. ISBN 978-1-305-26672-8, 1-305-26672-2
- HARTMAN, Gregory, FITZPATRICK, Sean, JORDAN, Alex, VOLLET, Carly, 2018. *APEX Calculus 1* [online]. [s.l.]: Leanpub. PDF e-Book. ISBN 978-1719219594. Verfügbar unter: <https://opentext.uleth.ca/apex-calculus/apex-calculus.html>.
- HARTMAN, Gregory, FITZPATRICK, Sean, JORDAN, Alex, VOLLET, Carly, 2018. *APEX Calculus 2* [online]. PDF e-Book. ISBN 978-1719263382. Verfügbar unter: <https://opentext.uleth.ca/apex-calculus/apex-calculus.html>.
- HARTMAN, Gregory, FITZPATRICK, Sean, JORDAN, Alex, VOLLET, Carly, 2018. *APEX Calculus 3* [online]. [s.l.]: Leanpub. PDF e-Book. ISBN 978-1719263665. Verfügbar unter: <https://opentext.uleth.ca/apex-calculus/apex-calculus.html>.
- HARTMAN, Gregory, STITZ, Carl, ZEAGER, Jeff, FITZPATRICK, Sean, 2024. *Elementary Linear Algebra* [online]. PDF e-Book. Verfügbar unter: <https://opentext.uleth.ca/Math1410/>.
- ARENS, Tilo, 2015. *Mathematik* [online]. Berlin [u.a.]: Springer Spektrum. PDF e-Book. ISBN 978-3-642-44919-2, 978-3-642-44918-5. Verfügbar unter: <https://doi.org/10.1007/978-3-642-44919-2>.
- WEITZ, Edmund, STEPHAN, Heike, 2021. *Konkrete Mathematik (nicht nur) für Informatiker: mit vielen Grafiken und Algorithmen in Python* [online]. Berlin: Springer Spektrum. PDF e-Book. ISBN 978-3-662-62618-4. Verfügbar unter: <https://doi.org/10.1007/978-3-662-62618-4>.
- KOCH, Jürgen, STÄMPFLE, Martin, 2025. *Mathematik für das Ingenieurstudium* [online]. München: Carl Hanser. PDF e-Book. ISBN 978-3-446-47810-7. Verfügbar unter: <https://doi.org/10.3139/9783446478107>.

## Additional remarks

No additional remarks.

## Mathematics 2

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                   |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MA2_EGM_E                   | Reg.-Nr.          | 2          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Study Programme             | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Engineering and Management  | Elective subject  | 2          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | only summer term            | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Schlickewei, Ulrich         |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Schlickewei, Ulrich         |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | English                     | Language of exams | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5 ECTS / 5 SWS              |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Contact hours               | 58 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Self-study                  | 67 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total                       | 125 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mathematics 2               |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SU/Ü-Lecture with exercises |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                   |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                   |            |
| Mathematics 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                   |            |
| <p>After attending the lecture students are able to:</p> <ul style="list-style-type: none"><li>recognize which questions in engineering sciences can be tackled by mathematical methods, and are able to post such questions themselves.</li><li>understand the logical way of reasoning, distinguish between a premise, a consequence, and a rule, and, furthermore, are able to build a line of argument within engineering applications.</li><li>recognize known types of problems both in familiar and in new contexts, can solve such problems using known methods.</li><li>understand the mathematical language used in the engineering literature and are able to describe in both oral and written form their own reasoning and solution approaches.</li><li>be confident in handling the introduced mathematical methods.</li></ul> |                             |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                   |            |
| <ul style="list-style-type: none"><li>Power series: basics, Taylor Series, applications</li><li>Differentiation in <math>\mathbb{R}^n</math>: basics, rules, applications</li><li>Integration in <math>\mathbb{R}^n</math>: basics, methods of integration, applications</li><li>Curves: basics, vector analysis, applications</li><li>Matrices: basics, determinants, applications</li><li>Linear maps: basics, eigenvalues and eigenvectors, applications</li></ul>                                                                                                                                                                                                                                                                                                                                                                        |                             |                   |            |

### Literature

- STRANG, Gilbert, 2017. *Calculus*. Wellesley, MA: Wellesley-Cambridge Press. ISBN 978-0-9802327-5-2
- STEWART, James, 2016. *Calculus*. Belmont, Calif.: Thomson Brooks/Cole. ISBN 978-1-305-26672-8, 1-305-26672-2
- STRANG, Gilbert, 2021. *Introduction to linear algebra*. Wellesley: Cambridge Press. ISBN 978-1-7331466-5-4, 1-7331466-5-2
- LAY, David C., LAY, Steven R., MCDONALD, Judi J., 2022. *Linear algebra and its applications* [online]. Boston : Pearson. PDF e-Book. ISBN 978-1-292-35122-3. Verfügbar unter: <https://elibrary.pearson.de/book/99.150005/9781292351223>.
- HARTMAN, Gregory, FITZPATRICK, Sean, JORDAN, Alex, VOLLET, Carly, 2018. *APEX Calculus* [online]. [s.l.]: Leanpub. PDF e-Book. Verfügbar unter: <https://opentext.uleth.ca/apex-calculus/apex-calculus.html>.
- HARTMAN, Gregory, STITZ, Carl, ZEAGER, Jeff, FITZPATRICK, Sean. *Elementary Linear Algebra* [online]. [s.l.]: Opentext University of Lethbridge. PDF e-Book. Verfügbar unter: <https://opentext.uleth.ca/Math1410/>.
- ARENS, Tilo und ET AL., 2015. *Mathematik*. Berlin [u.a.]: Springer Spektrum. ISBN 978-3-642-44918-5, 978-3-642-44919-2
- PAPULA, Lothar, . *Mathematik für Ingenieure und Naturwissenschaftler*.
- KOCH, Jürgen, STÄMPFLE, Martin, 2025. *Mathematik für das Ingenieurstudium* [online]. München: Carl Hanser. PDF e-Book. ISBN 978-3-446-47810-7. Verfügbar unter: <https://doi.org/10.3139/9783446478107>.

### Additional remarks

No additional remarks.

| Selected topics in Physics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                     |                          |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PHYS_EGM_E                                                                          | Reg.-Nr.                 | 3          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Study Programme                                                                     | Module type              | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Engineering and Management                                                          | General Elective Subject | 2          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | only summer term                                                                    | Module duration          | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Haug, Thomas                                                                        |                          |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Haug, Thomas (PHYS_EGM_E)<br>Polzer, Richard (PHYS_EGM_E_P)                         |                          |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | English                                                                             | Language of exams        | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 ECTS / 4 SWS                                                                      |                          |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Contact hours                                                                       | 47 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Self-study                                                                          | 78 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Total                                                                               | 125 h                    |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3: Selected topics in Physics<br>Selected topics in Physics (admission requirement) |                          |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SU/Ü/Pr-Lecture with exercises and practical course                                 |                          |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |                          |            |
| 3: schrP90 - written exam, 90 minutes<br>LN - participation without/with success                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |                          |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                     |                          |            |
| Prerequisite for participation in the written examination is a successfully completed practical course (admission requirement): Three laboratory experiments in small groups, each consisting of preparation, execution and report.<br><br>Written examination (90 minutes)<br>Permitted aids: pocket calculator, not programmable; any written documents (printed or handwritten)                                                                                                                                    |                                                                                     |                          |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                     |                          |            |
| PrA - Practical course (Admission requirement)<br>Three laboratory experiments in small groups, each consisting of preparation, execution and report.                                                                                                                                                                                                                                                                                                                                                                 |                                                                                     |                          |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                     |                          |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                     |                          |            |
| After participating in the module courses, students are able to <ul style="list-style-type: none"><li>understand and correctly apply the physical concepts related to kinematics, dynamics, fluid mechanics and thermodynamics.</li><li>examine motion and collision processes and to evaluate oscillations.</li><li>analyze simple flow processes without friction.</li><li>assess and evaluate thermodynamic cycle processes.</li><li>determine simple heat transfer processes between solids and fluids.</li></ul> |                                                                                     |                          |            |

- perform selected physical experiments independently and in a team, evaluate and assess the data.

#### Content

- Kinematics of the mass point, free fall, horizontal throw
- Dynamics, Newton's axioms, mass, force, gravitation
- Momentum, work, energy, power, conservation of energy, sustainability
- Collision processes: elastic and inelastic collisions
- Rotary motion, torque, angular momentum, analogy of translation and rotation
- Mechanics of rigid bodies, moment of inertia, Steiner's theorem
- Oscillations, harmonic oscillation, free damped oscillation
- Mechanics of liquids and gases, pressure, gravitational pressure, Bernoulli's equation
- Kinetic theory of gases, gas pressure, thermal energy
- 1st law of thermodynamics, heat capacity, change of state of ideal gases
- Thermodynamic cycles
- Heat transfer, convection, thermal radiation, sustainable thermal management

The event includes the following sustainability aspects of the UN (SDGs):

4: Quality Education; 7: Affordable and clean Energy; 13: Climate Action

#### Literature

- TIPLER, Paul A., 2007. *Physics for Scientists and Engineers*. W. H. Freeman. ISBN ISBN-13: 978-1429202657

#### Additional remarks

Bonus system:

Weekly test questions (quiz) may be answered. Depending on the quality of the achieved results, bonus points for the exam performance can be earned.

| Computer Science                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |                    |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CS_EGM_E                                                        | Reg.-Nr.           | 4          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Study Programme                                                 | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Engineering and Management                                      | Compulsory Subject | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | only winter term                                                | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Oelker, Martin                                                  |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Bock, Jürgen (CS_EGM_E)<br>Oelker, Martin (CS_P_EGM_E)          |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | English                                                         | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5 ECTS / 4 SWS                                                  |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Contact hours                                                   | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Self-study                                                      | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total                                                           | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4: Computer Science<br>Computer Science (admission requirement) |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | SU/Ü/Pr-Lecture with exercises and practical course             |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                 |                    |            |
| 4: schrP90 - written exam, 90 minutes<br>LN - participation without/with success                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |                    |            |
| Within the practical course, six tests, which deal with essential topics of the lecture will be given. If the assignment is successfully completed, a test certificate will be awarded. A total of at least five tasks must be completed. Completed solutions have to be presented individually within a fixed time frame, whereby questions about the solution concept and the programme created have also to be answered. Only if all four tests are acquired in time, the admission is granted.                                                                                                                                                                                                                                                                                                                                                           |                                                                 |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                 |                    |            |
| Practical course                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                 |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                 |                    |            |
| After completing this module, students will be able to <ul style="list-style-type: none"><li>• exhibit a practical understanding of the broad and dynamic field of computer science.</li><li>• apply their knowledge to the basic principles of data processing.</li><li>• deal with basic terms and key concepts of computing and computer systems.</li><li>• apply their theoretical understanding of computer networks to the Internet.</li><li>• adhere to the basic concepts of cybersecurity in their daily use of computers.</li></ul> Students are enabled to code simple structures with Python. After successful completion of the module they can <ul style="list-style-type: none"><li>• use different Python GUIs (IDE, Jupyter notebook, Terminal)</li><li>• write small programs which highlight the use of control structures etc.</li></ul> |                                                                 |                    |            |

- use libraries like NumPy and Pandas

#### Content

- Information and information representation for automated processing
- Concepts of modern computer architectures
- General concepts of operating systems
- Programming principles and universal concepts of programming languages
- Algorithms and data structures
- General principles of computer networking
- Basic concepts of cybersecurity
- Basic concepts: data types, control statements, functions
- OOP: classes in Python
- Python libraries: NumPy, Pandas

#### Literature

- PETZOLD, Charles , 2023. *CODE* [online]. *the hidden language of computer hardware and software*. Upper Saddle River, NJ: Pearson Education, Inc. PDF e-Book. ISBN 978-0-13-790933-9. Verfügbar unter: <https://elibrary.pearson.de/book/99.150005/9780137909339>.
- KUROSE, James F. und Keith W. ROSS, 2026. *Computer networking: a top-down approach*. Harlow: Pearson. ISBN 978-0-13-542933-4
- BROOKSHEAR, J. Glenn und Dennis BRYLOW, 2020. *Computer Science: an overview*. 13. Auflage. Harlow: Pearson. ISBN 1-292-26342-3, 978-1-292-26342-7
- TANENBAUM, Andrew S. und Todd AUSTIN, 2013. *Structured computer organization*. Boston, Mass. ; Munich [u.a.]: Pearson. ISBN 978-0-273-76924-8
- TANENBAUM, Andrew S. und Herbert BOS, 2024. *Modern operating systems*. Hoboken, New Jersey: Pearson. ISBN Hoboken, NJ
- TANENBAUM, Andrew S., David WETHERALL und Nick FEAMSTER, 2020. *Computer networks*. Harlow, United Kingdom: Pearson Education Limited. ISBN 978-1-292-37406-2

#### Additional remarks

Prerequisite for participation in the written examination is a successfully completed practical course.

## Mechanical Design 1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                          |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | MD1_EGM_E                   | Reg.-Nr.                 | 5          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Study Programme             | Module type              | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Engineering and Management  | General Elective Subject | 2          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | only summer term            | Module duration          | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Tröber, Philipp             |                          |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Tröber, Philipp             |                          |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | English                     | Language of exams        | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5 ECTS / 4 SWS              |                          |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Contact hours               | 47 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Self-study                  | 78 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total                       | 125 h                    |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Mechanical Design 1         |                          |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SU/Ü-Lecture with exercises |                          |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                          |            |
| schrP120 - written exam, 120 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                          |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                          |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                          |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                          |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                          |            |
| <p>At the end of the course, students are able to</p> <ul style="list-style-type: none"><li>draw components and assemblies completely and in accordance with standards, as well as interpret technical drawings professionally.</li><li>apply the various projection methods.</li><li>select tolerances, fits, and surface finishes appropriate for function and manufacturing.</li><li>evaluate the mountability of an assembly by a tolerance stack.</li><li>develop new components and assemblies by linking their knowledge and design them for production.</li></ul>                                                                            |                             |                          |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                          |            |
| <ul style="list-style-type: none"><li>Symbolic representations used in technical drawings</li><li>Projection methods for the graphic representation of technical components and products</li><li>All views of a component including sectional views, detailed views</li><li>Dimensioning of components with regard to function, manufacturing and inspection as well as the associated dimensioning rules</li><li>ISO tolerance system, free and general tolerneces, shape and position tolerances, tolerance stack-up</li><li>Surface specifications</li><li>Typical machine elements and standard parts and their graphic representation</li></ul> |                             |                          |            |

- Design guidelines for various manufacturing processes
- Creation of freehand sketches
- Geometrical product specification

#### Literature

- GOMERINGER, Roland und andere, 2018. *Mechanical and Metal Trades Handbook*. Haan-Gruiten: Verlag Europa-Lehrmittel, Nourney, Vollmer GmbH & Co. KG. ISBN 978-3-8085-1915-8, 3-8085-1915-0

#### Additional remarks

- Moodle course with
- Lecture notes
  - Lecture videos
  - Self-tests
  - Practice exercises

| Material Science                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                              |                          |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | MATSCI_EGM_E                                                                 | Reg.-Nr.                 | 8          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Study Programme                                                              | Module type              | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Engineering and Management                                                   | General Elective Subject | 2          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | only winter term                                                             | Module duration          | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Landesberger, Martin                                                         |                          |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Landesberger, Martin (MATSCI_EGM_E)<br>Landesberger, Martin (MATSCI_P_EGM_E) |                          |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | English                                                                      | Language of exams        | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5 ECTS / 5 SWS                                                               |                          |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Contact hours                                                                | 58 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Self-study                                                                   | 67 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Total                                                                        | 125 h                    |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8: Material Science<br>Material Science (admission requirement)              |                          |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SU/Ü/Pr-Lecture with exercises and practical course                          |                          |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                              |                          |            |
| 8: LN - participation without/with success<br>LN - participation without/with success                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                              |                          |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                              |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                              |                          |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                              |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                              |                          |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                              |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                              |                          |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |                          |            |
| After attending the lecture students are able to: <ul style="list-style-type: none"><li>understand the different types of chemical bonds, their occurrence in materials, and the influence of metallic crystal structures on material properties and plastic formability.</li><li>identify, describe, and sketch crystal defects and explain the role of dislocations in the plastic deformation of metals.</li><li>understand the relationship between crystal defects and the various hardening mechanisms of metallic materials.</li><li>explain diffusion mechanisms in solids, evaluate the influence of time and temperature on diffusion processes, and relate diffusion to engineering applications.</li><li>interpret phase diagrams, particularly the iron-carbon phase diagram, and explain their significance for material behaviour and processing.</li><li>understand solidification and solid-state transformation processes, including nucleation, crystal growth, martensitic transformation, and precipitation reactions, and assess their influence on microstructure and material properties.</li></ul> |                                                                              |                          |            |

### Content

- Atomic structure and the nature of chemical bonding
- Structures of solids, especially metals
- Imperfections in real crystals
- Plastic deformation in ideal and real crystals, hardening effects by disorders
- Diffusion – mechanism, meaning and applications
- Phases and phase diagrams
- Kinetics of solidification
- Kinetics of solid state reactions – martensitic transformation and precipitation reactions
- Materials testing and material properties

### Literature

- ASKELAND, Donald R. und Wendelin J. WRIGHT, c 2016. *The science and engineering of materials*. Boston, Mass.: Cengage Learning. ISBN 978-1-305-07710-2, 1-305-07710-5
- CALLISTER, William D. und David G. RETHWISCH, 2020. *Materials science and engineering: an introduction*. 10. Auflage. Hoboken, NJ: Wiley. ISBN 978-1-119-45391-8
- FISCHER, Traugott, 2009. *Materials science for engineering students*. Amsterdam [u.a.]: Elsevier, Academic Press. ISBN 978-0-12-373587-4, 0-12-373587-4

### Additional remarks

No additional remarks.

| Business Administration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | BA_EGM_E                    | Reg.-Nr.           | 9          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Engineering and Management  | Compulsory Subject | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | only winter term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Eisenberg, Andrea           |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Albrecht, Tobias            |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5 ECTS / 4 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Contact hours               | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Self-study                  | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Business Administration     |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                             |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| <p>After attending the lecture students are able to:</p> <ul style="list-style-type: none"><li>understand (on a high level) the various disciplines of business administration including the respective decision needs.</li><li>gain basic knowledge about selected practical business topics, which are not covered in subsequent subjects of the curriculum, including the setup of a company and human resource management.</li><li>can evaluate the implications of economics for business decisions.</li><li>can calculate and draw demand curve, supply curve and market equilibria as well as can apply the instruments to real life cases.</li><li>are able to analyse the importance of monetary policy, especially can explain the role of the central banks and can calculate a consumer price index and an inflation rate.</li></ul> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| <ul style="list-style-type: none"><li>Subjects of business administration and economics: economic principle, resources, companies, business as a science</li><li>Profit generation: the term profit, limitations, balance sheet, profit-/loss statement, shareholder value, entrepreneurial risks, leverage effect</li><li>Production factors (management, labour, means of production, raw material), further differentiation of management activities (leadership, planning, decision making, organization, monitoring)</li><li>Setup of a company: legal form, alliances &amp; partnering, choice of industrial location</li></ul>                                                                                                                                                                                                            |                             |                    |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Human resource management: planning, recruiting, personnel layoff, personnel deployment, development, leadership</li> <li>Microeconomics: market forms (polypoly, oligopoly, monopoly), price formation in the different market forms, market failure</li> <li>Macroeconomics: monetary policy, definition of money, money creation, instruments of central banks, causes and consequences of inflation and deflation, consumer price index and inflation rate, economic welfare, gross domestic profit (GDP), economic growth</li> </ul> |
| <b>Literature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <ul style="list-style-type: none"> <li>MANKIW, Nicholas Gregory und Mark P. TAYLOR, 2023. <i>Economics</i>. Andover, Hampshire: Cengage. ISBN 978-1-4737-8698-1</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Additional remarks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| No additional remarks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Financial Accounting

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                          |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FINACC_EGM_E                | Reg.-Nr.                 | 10         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Study Programme             | Module type              | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Engineering and Management  | General Elective Subject | 2          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | only summer term            | Module duration          | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Eisenberg, Andrea           |                          |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Eisenberg, Andrea           |                          |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | English                     | Language of exams        | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5 ECTS / 5 SWS              |                          |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Contact hours               | 58 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Self-study                  | 67 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Total                       | 125 h                    |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Financial Accounting        |                          |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SU/Ü-lecture with exercises |                          |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                          |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                          |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                          |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                          |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                             |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                          |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                          |            |
| <p>After attending the lecture students are able to:</p> <ul style="list-style-type: none"><li>• know and use the specific terms of accounting and understand the theoretical foundations of financial accounting.</li><li>• understand the structure and positions of balance sheets and determine the initial and subsequent measurement of balance sheet items in accordance with different accounting standards.</li><li>• understand the differences between German GAAP and IFRS and apply both accounting frameworks to solve business problems.</li><li>• understand the structure and positions of income statements and classify business transactions according to their impact on profit, cash flow, and financial performance.</li><li>• understand and prepare cash flow statements and distinguish between cash-effective and non-cash-effective transactions.</li><li>• analyze information in annual reports and prepare balance sheets, profit and loss accounts, income statements and cash flow statements for multiple accounting periods based on opening balances and business transactions.</li></ul> |                             |                          |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                          |            |
| <ul style="list-style-type: none"><li>• Basic principles of accounting</li><li>• German and European accounting principles and IFRS accounting standards</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                          |            |

- Balance Sheet: structure and balance sheet positions, initial recognition and subsequent measurement according to German GAAP and according to IFRS
- Profit and loss accounts: structure and positions, determination of profit according to German GAAP, EU directive and according to IFRS
- Accruals accounting
- Cash effective and non-cash effective transactions, cash flow statements
- Annual reports
- Case study: Founding and closing of a firm over six periods, preparation of balance sheet, profit and loss accounts and cash flow statements for each period
- Weekly exercise session

#### Literature

- WEETMAN, Pauline und Darren JUBB, 2024. *Financial accounting: an introduction*. Harlow, England: Pearson. ISBN 978-1-292-45706-2
- ALEXANDER, David, Christopher NOBES und Anne ULLATHORNE, 2020. *Financial accounting: an international introduction*. Harlow, England: Pearson. ISBN 978-1-292-29583-1
- IASB, . *IAS 1, 16, 36: International Accounting Standards*.

#### Additional remarks

No additional remarks.

| Production systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                     |                          |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|--------------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PRODSYS_EGM_E                                       | Reg.-Nr.                 | 11         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Study Programme                                     | Module type              | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Engineering and Management                          | General Elective Subject | 2          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | only summer term                                    | Module duration          | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Meyer, Roland                                       |                          |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Meyer, Roland                                       |                          |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | English                                             | Language of exams        | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5 ECTS / 4 SWS                                      |                          |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Contact hours                                       | 47 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Self-study                                          | 78 h                     |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Total                                               | 125 h                    |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Production systems                                  |                          |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SU/Ü/Pr-Lecture with exercises and practical course |                          |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                     |                          |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                     |                          |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                     |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                     |                          |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                     |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                     |                          |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                     |                          |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                     |                          |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                     |                          |            |
| <p>After attending this lecture students will be able to:</p> <ul style="list-style-type: none"><li>• know and be secure with the areas, elements and typical terms of production engineering.</li><li>• know state of art, basic ways of organizing and applying production systems.</li><li>• understand and asses the concept of added value, waste and profitability in production.</li><li>• recognize, describe and asses types of machine tools and their applications.</li><li>• incorporate and contribute to tasks within an industrial producion planning department regarding machining areas and assembly tasks.</li><li>• solve tasks in designing production systems in teams and are able to present the results.</li><li>• understand actual digital methods and supports in production systems, the impact and implications of sustainability and apply them to organisation as well as to technology of production systems.</li></ul> |                                                     |                          |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                     |                          |            |
| <ul style="list-style-type: none"><li>• Introduction</li><li>• Machine tools</li><li>• Lean manufacturing</li><li>• Assembly technology</li><li>• Digital manufacturing</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                     |                          |            |

- Sustainable production
- Production logistics
- Production training
- Excursion to production company

#### Literature

- FREIVALDS, Andris und Benjamin W. NIEBEL, 2014. *Niebel's Methods, standards, and work design*. 13. Auflage. New York, NY: McGraw-Hill. ISBN 978-0-07-337636-3, 0-07-337636-1
- KOETHER, Reinhard, 2007. *Technische Logistik*. München: Hanser. ISBN 978-3-446-40761-9, 3-446-40761-8
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- GOLDRATT, Eliyahu M. und Jeff COX, 2016. *The Goal: A process of ongoing improvement*. Routledge: London and New York. ISBN 978-0-566-08664-9, 978-0-566-08665-6
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- MAYNARD, Harold Bright und andere, 2001. *Maynard's industrial engineering handbook*. New York: McGraw-Hill. ISBN 0-07-144927-2, 978-0-07-041102-9
- TAYLOR, Frederick Winslow, 2019. *The principles of scientific management*. Boca Raton: CRC Press; Taylor & Francis Group.
- LIKER, Jeffrey K., 2020. *The Toyota way: 14 management principles from the world's greatest manufacturer*. New York [u.a.]: McGraw-Hill. ISBN 978-1-260-46851-9

#### Additional remarks

Bonuspoints System:

In this lecture there may be tasks, which will lead to bonus points to the exams in case of good execution. At maximum 5 bonus points may be given.

| Start-up Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                    |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SuP_EGM_E                   | Reg.-Nr.           | 12         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Engineering and Management  | Compulsory Subject | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | only winter term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Götz, Heike                 |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Eisenberg, Andrea           |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5 ECTS / 5 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Contact hours               | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Self-study                  | 48 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Start-up Project            |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |
| project report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| <p>Introductory part</p> <ul style="list-style-type: none"><li>• TOPSIM simulation game (compulsory participation, admission requirement for project part)</li></ul> <p>Project work (compulsory participation in group meetings) with the following components:</p> <ul style="list-style-type: none"><li>• Presentation (oral presentation)</li><li>• Research task (written form)</li><li>• Project report (written form)</li></ul>                                                                                                                                                                                                                                                                                  |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                    |            |
| <p>Students can successfully work on and solve complex practice-orientated tasks over the course of a semester. In particular students are able to:</p> <ul style="list-style-type: none"><li>• systematically familiarise themselves with a specialist topic that is new to them.</li><li>• collect and analyse information and data in a goal-oriented manner and cite it in a scientifically correct way.</li><li>• find well-founded solutions to specific business issues in a team.</li><li>• present work results convincingly and document them in accordance with technical and scientific standards.</li><li>• apply methods of creativity techniques and project management.</li></ul> <p>Dual students:</p> |                             |                    |            |

After attending the lecture, dual students have reflected on the organization of their company and the contribution of functional roles in their company, particularly in the context of innovation processes. In addition, they have developed their personal and social skills and are, for example, able to handle simple managerial tasks within the framework of a project.

### Content

Introduction:

- Conduct the Management Simulation "TOPSIM" (in small teams)

Project:

- Company's organisational structures, contributions of business functions, interfaces
- Elements of a business plan
- Presentation techniques and student presentations
- Research techniques (incl. documentation) and research task for students (E-learning course from teaching library)
- Setup of a mock business plan (medium size teamwork for students)

Dual students:

Due to the practical experience gained in their partner company dual students are in a better starting position for achieving the learning objectives.

In the context of management simulation, they take leadership roles and thereby incorporate actively their practical experience. In the "lessons learned" part they additionally have the task to reflect the simulation compared to the real situation as in their company. The results are presented in a brief presentation at the annual shareholders' meeting.

In the project part they primarily work on strategic tasks for which they incorporate their knowledge and their competencies acquired during their practical experience.

### Literature

- TOPSIM - General Management Participant Manual

### Additional remarks

Notes on the lecture dates:

The TOPSIM simulation game is part of the introductory week and takes place as a block seminar at the beginning of the semester. The project part usually takes place fortnightly. The exact dates can be found in the semester schedule.

| Electrical Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                    |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EGM_ETEC_E                  | Reg.-Nr.           | 13         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Engineering and Management  | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | only summer term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Haug, Thomas                |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Haug, Thomas                |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 ECTS / 5 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Contact hours               | 58 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Self-study                  | 67 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Electrical Engineering      |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |
| <p>After attending the lecture students can:</p> <ul style="list-style-type: none"><li>• know and use specialist terminology in electrical engineering and understand the fundamental physical laws of electrical engineering and their interrelationships.</li><li>• understand the boundary conditions of the relevant laws of physics and select appropriate methods and principles for solving engineering problems.</li><li>• perform electrical engineering calculations accurately using appropriate units and methods for direct current (DC) and alternating current (AC) circuits.</li><li>• analyze and calculate alternating current networks using complex numbers and established circuit analysis techniques.</li><li>• understand and calculate electrical and magnetic field quantities, including the analysis of simple magnetic circuits.</li><li>• understand the principles of semiconductor technology and key electronic components, and independently acquire, discuss, and apply electrical engineering knowledge both individually and in teams.</li></ul> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
| <ul style="list-style-type: none"><li>• Direct current circuits: voltage, current, Ohm’s law, energy, power, Kirchhoff’s laws, Thevenin equivalent, Norton equivalent circuit, series connection, parallel connection, maximum power transfer, calculation of networks</li><li>• Electric field: electric field quantities, capacitance, energy in the electrostatic field, forces in the electrostatic field, switching operations</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                    |            |

- Magnetic field: magnetic field quantities, coil inductance, magnetic circuit, magnetic flux law, magnetic energy of the coil, forces in the magnetic field, induction law, self-induction, switching operations
- Alternate current circuit: sinusoidal change of electric quantities, circuit analysis of alternate current networks, power, frequency response, transformers
- Semiconductors: diode, transistor, operational amplifier, basics of electric circuits; digital circuits
- Measuring electric quantities

#### Literature

- HACKER, Viktor, SUMEREDER, Christof, 2020. *Electrical engineering: fundamentals* [online]. München; Wien: De Gruyter Oldenbourg. PDF e-Book. ISBN 978-3-11-052111-5, 978-3-11-052113-9. Verfügbar unter: <https://doi.org/10.1515/9783110521115>.
- N. MAKAROV, Sergey, LUDWIG, Reinhard, BITAR, Stephen J., 2019. *Practical Electrical Engineering* [online]. Cham: Springer International Publishing. PDF e-Book. ISBN 978-3-319-96692-2. Verfügbar unter: <https://doi.org/10.1007/978-3-319-96692-2>.
- HAGMANN, Gert, 2020. *Grundlagen der Elektrotechnik: das bewährte Lehrbuch für Studierende der Elektrotechnik und anderer technischer Studiengänge ab 1. Semester*. 18. Auflage. Wiebelsheim: AULA-Verlag. ISBN 978-3-89104-830-6, 3-89104-830-0
- TIPLER, Paul Allen und Gene MOSCA, 2008. *Physics for scientists and engineers*. New York: Freeman. ISBN 978-1-4292-0132-2

#### Additional remarks

Bonus system:

During the course, lab assignments (in the lab or online) may be assigned, which must be completed and documented in lab reports. In addition, students may answer weekly quiz questions. Depending on the quality of the work, bonus points toward the final exam grade can be earned based on the lab reports and performance on the quiz questions.

| Software Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SWD_EGM                                              | Reg.-Nr.           | 14         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Study Programme                                      | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Engineering and Management                           | Compulsory Subject | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | only winter term                                     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Schiendorfer, Alexander                              |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Hyusmen, Sibel Talyat; Schiendorfer, Alexander       |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | English                                              | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 ECTS / 4 SWS                                       |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Contact hours                                        | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Self-study                                           | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Total                                                | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Software Development                                 |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SU/Ü/Pr-Lecture with exercises and practical courses |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                      |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                      |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                      |                    |            |
| <p>The students gain a practical understanding of the field of software development as an engineering tool to solve problems. After completing the module they are able to:</p> <ul style="list-style-type: none"><li>• design, build, and test software applications using the Python programming language.</li><li>• understand and document customer requirements and solve problems using coding/technology.</li><li>• communicate the architecture of their software effectively to a team of software developers.</li><li>• improve and debug existing code.</li><li>• use automated tests to make sure the software is implemented correctly.</li><li>• understand the need to work with other professionals, e.g. UX designer, graphic designer, product manager, technical writer.</li></ul> |                                                      |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                      |                    |            |
| <ul style="list-style-type: none"><li>• Application areas of software development: mobile apps, web applications, tools for automation of repeating tasks, smart factories, artificial intelligence, etc.</li><li>• The Python programming language</li><li>• Variables, conditional statements, functions and code reuse</li><li>• Data structures: Lists, dictionaries</li><li>• Effective testing and debugging</li><li>• Object-oriented analysis &amp; design (Inheritance, Polymorphism)</li></ul>                                                                                                                                                                                                                                                                                              |                                                      |                    |            |

- Simple algorithms and an informal introduction to algorithmic complexity
- Development of user-friendly graphical user interfaces
- The whole software development process from analysis to testing

#### Literature

- KLEIN, Bernd, 2021. *Einführung in Python 3: für Ein- und Umsteiger*. München: Hanser. ISBN 978-3-446-46556-5
- PILONE, Dan und Russ MILES, 2008. *Headfirst software development: [a brain-friendly guide]*. Beijing [u.a.]: O'Reilly. ISBN 0-596-52735-7, 978-0-596-52735-8
- FREEMAN, Eric und Elisabeth ROBSON, 2020. *Headfirst design patterns*. [s.l.]: O'Reilly. ISBN 978-1-492-07800-5

#### Additional remarks

Bonus points system:

In lectures, there may be tasks and quizzes, which will lead to bonus points for the exam in case of good execution. At most 10% of the final grade can be improved via bonus points.

| Engineering Mechanics                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                               |                    |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                               | EngMECH_EGM                   | Reg.-Nr.           | 15         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Study Programme               | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Engineering and Management    | Compulsory Subject | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | only winter term              | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Haug, Thomas                  |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Haug, Thomas; Polzer, Richard |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                           | English                       | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 ECTS / 5 SWS                |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Contact hours                 | 58 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Self-study                    | 67 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Total                         | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Engineering Mechanics         |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | S/Pr-Seminar/Practical course |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                               |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                |                               |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                    |                               |                    |            |
| Written exam, 90 minutes<br>Permitted aids:<br>Non-programmable calculator<br>Written documents (handwritten or printed)                                                                                                                                                                                                                                                                                                                                                          |                               |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                    |                               |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                               |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                               |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                               |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                               |                    |            |
| After participating in the module courses, students can: <ul style="list-style-type: none"><li>• explain the effects of forces and moments.</li><li>• analyze and calculate static problems and apply equilibrium equations.</li><li>• determine balance points and centroids of areas and bodies.</li><li>• determine competent outer and inner reactions.</li><li>• solve friction problems.</li><li>• estimate stresses, strains and deformations of bars and beams.</li></ul> |                               |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                               |                    |            |
| <ul style="list-style-type: none"><li>• Introduction to the basics of statics (bars, beams, plates, etc., bearings and hinges, equilibrium conditions)</li><li>• Central and common force systems, free-body diagram, moments</li><li>• Balance points, centroids</li><li>• Supporting structures, Truss structures and Determinacy</li><li>• Friction</li></ul>                                                                                                                  |                               |                    |            |

- Definition of stresses and strains, deformation, stress state, Mohr's circle
- Linear elastic material law, elasticity theory
- Combined loading
- bending of beams, stress and deformation
- Torsion

#### Literature

- GROSS, Dietmar, Band 12013. *Engineering mechanics* [online]. Berlin [u.a.]: Springer. PDF e-Book. ISBN 978-3-642-30319-7. Verfügbar unter: <https://doi.org/10.1007/978-3-642-30319-7>.
- GROSS, Dietmar, GROSS, Dietmar, HAUGER, Werner, SCHRÖDER, Jörg, WALL, Wolfgang A., BONNET, Javier, Band 2[2018. *Engineering mechanics* [online]. Berlin [u.a.]: Springer. PDF e-Book. ISBN 978-3-662-56272-7. Verfügbar unter: <https://doi.org/10.1007/978-3-662-56272-7>.
- GROSS, Dietmar, GROSS, Dietmar, HAUGER, Werner. *Technische Mechanik, Band 1-4* [online]. PDF e-Book.
- GROSS, Dietmar und andere, 2017. *Statics – formulas and problems: engineering mechanics 1*. Berlin, Heidelberg: Springer. ISBN 978-3-662-53854-8
- HIBBELER, Russell C. und Jun Hwa LEE, 2023. *Engineering mechanics, statics*. Harlow, UK: Pearson. ISBN 1-292-44404-5, 978-1-292-44404-8
- KESSEL, Siegfried, FRÖHLING, Dirk, 2012. *Technische Mechanik: zweisprachiges Lehrbuch zu Grundlagen der Mechanik fester Körper = Engineering mechanics : bilingual textbook on the fundamentals of solid mechanics* [online]. Wiesbaden: Springer Vieweg. PDF e-Book. ISBN 978-3-8348-2182-9. Verfügbar unter: <https://doi.org/10.1007/978-3-8348-2182-9>.
- GABBERT, Ulrich, RAECKE, Ingo, 2013. *Technische Mechanik für Wirtschaftsingenieure: mit 301 Abbildungen, 16 Tabellen, 83 Beispielen* [online]. München: Hanser. PDF e-Book. ISBN 978-3-446-43595-7, 978-3-446-43253-6. Verfügbar unter: <https://doi.org/10.3139/9783446435957>.
- HIBBELER, Russell C. und Jun Hwa LEE, 2023. *Mechanics of Materials*. Harlow: Pearson. ISBN 1-292-72573-7, 978-1-29-272573-4

#### Additional remarks

Bonus system:

Weekly test questions (quiz) may be answered. Depending on the quality of the results achieved, bonus points for the exam performance can be earned.

## Mechanical Design 2

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EGM_MDES2_E                 | Reg.-Nr.           | 16         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Engineering and Management  | Compulsory Subject | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | only winter term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Tröber, Philipp             |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Tröber, Philipp             |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5 ECTS / 4 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Contact hours               | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Self-study                  | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mechanical Design 2         |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
| SA - Seminar paper with written elaboration (15-20 pages) and with oral examination (15min) and oral presentation (15-20 minutes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| <p>At the end of the course, students will be able to</p> <ul style="list-style-type: none"><li>• apply the procedure of the systematic and method-based approach in product development.</li><li>• state the interrelationships between development and design and other departments of a developing and manufacturing company.</li><li>• independently develop sophisticated products by applying the methods taught and using adequate working techniques.</li><li>• interpret the communication required for product development in a company.</li><li>• apply the knowledge to be a functional and social member of a project team.</li><li>• independently develop components and assemblies including the derivation of technical drawings using the 3D CAD system CATIA.</li></ul> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                    |            |
| <ul style="list-style-type: none"><li>• Basic phases of the product development process</li><li>• Requirement list and specification, functional specification</li><li>• Abstraction</li><li>• Functional structures</li><li>• Creativity and other techniques to find solutions</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |

- Systematic preparation of solution approaches (morphology) and variation as well as combination techniques
- Evaluation of concepts and concept selection
- Creation of technical drafts, draft construction
- Basic design rules, guidelines and principles
- Basic construction elements
- Semester exercise to implement the material learned
- Working with the 3D CAD system CATIA (component design, assembly design, drawing generation)

#### Literature

- PAHL, Gerhard, BEITZ, Wolfgang, WALLACE, Ken, 1996. *Engineering Design: A Systematic Approach* [online]. London: Springer London. PDF e-Book. ISBN 978-1-4471-3581-4. Verfügbar unter: <https://doi.org/10.1007/978-1-4471-3581-4>.
- CADFOLKS, 2014. *CATIA V5-6R2014 For Beginners*.

#### Additional remarks

No additional remarks.

| Power Engineering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                      |                    |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | POWE_EGM                                             | Reg.-Nr.           | 17         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Study Programme                                      | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Engineering and Management                           | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | only summer term                                     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bschorer, Sabine                                     |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Bschorer, Sabine                                     |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | English                                              | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5 ECTS / 4 SWS                                       |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Contact hours                                        | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Self-study                                           | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Total                                                | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Power Engineering                                    |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SU/Ü/Pr-Lecture with exercises and practical courses |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                      |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                      |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                      |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                      |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                    |            |
| <p>After attending the module courses, participants will be able to</p> <ul style="list-style-type: none"><li>• correctly apply the subject-specific terminology.</li><li>• describe and evaluate the most important methods of energy conversion and discuss their pros and cons.</li><li>• evaluate and calculate fundamental problems of thermodynamics (e.g. enthalpy, entropy, T-s-diagram, heat transfer) and fluid dynamics.</li><li>• calculating and evaluate cyclic processes.</li><li>• estimate the efficiency of different methods of power and heat generation.</li><li>• discuss and evaluate the social relevance and the environmental effects of the different energy technologies.</li></ul> |                                                      |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      |                    |            |
| <ul style="list-style-type: none"><li>• The actual situation of energy supply</li><li>• Influence on environment and climate</li><li>• Thermal cycles for power and heat generation<ul style="list-style-type: none"><li>◦ Steam and gas turbine process</li><li>◦ The combined cycle power plant</li><li>◦ Combined heat and power plant (CHP)</li></ul></li><li>• Use of nuclear power</li></ul>                                                                                                                                                                                                                                                                                                              |                                                      |                    |            |

- Basics of renewable energy
- Hydropower; wind power; biomass; solar energy
- Storage of energy
- Laboratory session with wind turbine, CHP, electrolysis/fuel cell, solar technology

#### Literature

- DEMIREL, Yaşar, 2016. *Energy: Production, Conversion, Storage, Conservation, and Coupling* [online]. Cham: Springer International Publishing. PDF e-Book. ISBN 978-3-319-29650-0, 978-3-319-29648-7. Verfügbar unter: <https://doi.org/10.1007/978-3-319-29650-0>.
- QUASCHNING, Volker, 2016. *Understanding renewable energy systems*. London and New York: Routledge. ISBN 978-1-138-78194-8, 978-1-138-78196-2

#### Additional remarks

No additional remarks.

| Cost Accounting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                             |                    |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | COSTA_EGM                   | Reg.-Nr.           | 18         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Engineering and Management  | Compulsory Subject | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | only winter term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Eisenberg, Andrea           |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Eisenberg, Andrea           |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5 ECTS / 4 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Contact hours               |                    | 47 h       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Self-study                  |                    | 78 h       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Total                       |                    | 125 h      |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Cost Accounting             |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                             |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                    |            |
| <p>At the end of the course students can:</p> <ul style="list-style-type: none"><li>• know and use the specific terms of cost accounting and understand the purpose of cost accounting as well as the difference between financial accounting and cost accounting.</li><li>• classify costs by nature of cost, by traceability of cost and by cost behavior.</li><li>• prepare simple calculations of inventory, cost of goods sold (COGS) and prices based on a blanket rate, and perform the allocation and apportionment of overhead costs using a cost allocation sheet based on absorption costing, including the calculation of departmental overhead rates.</li><li>• calculating unit costs using different versions of process costing and different versions of job order costing.</li><li>• understand the concept of variable costing and the meaning of the contribution margin, and apply contribution analysis, economies of scale, break-even analysis, product portfolio decisions and manufacturing process decisions to real-life cases.</li><li>• understand the importance of standard costing and comparative cost accounting, prepare static and flexible budgets, and calculate and interpret different types of variances.</li></ul> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| <ul style="list-style-type: none"><li>• Difference between financial and cost accounting</li><li>• Classification of cost according to nature, traceability and behavior</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |

- Absorption costing: blanket rate, allocation and apportionment of overhead cost with cost allocation sheet, process costing, job order costing with plant-wide allocations rate, departmental overhead rate and machine hour rates
- Variable costing: contribution margin, direct costing, multi-step contribution analysis, decision making with contribution margin, economies of scale, pricing decisions, break-even analysis, product mix, production process selection
- Standard costing: purpose of standard costing, static and flexible budget, variance analysis
- International comparison of accounting applications
- Casework

#### Literature

- TASCHNER, Andreas und Michel CHARIFZADEH, 2016. *Management and cost accounting: tools and concepts in a central European context*. Weinheim: Wiley-VCH. ISBN 978-3-527-50822-8, 3-527-50822-8
- DRURY, Colin und Mike TAYLES, 2024. *Management and cost accounting*. Andover: Cengage. ISBN 978-1-4737-9124-4

#### Additional remarks

No additional remarks.

| Marketing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EGM_MKT_E                   | Reg.-Nr.           | 19         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Engineering and Management  | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | only summer term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Schwandner, Gerd            |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Schwandner, Gerd            |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5 ECTS / 5 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Contact hours               | 58 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Self-study                  | 67 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Marketing                   |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                             |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                    |            |
| <p>The students can:</p> <ul style="list-style-type: none"><li>explain the tasks of marketing in a company and discuss why market-oriented management is required, including concepts such as customer satisfaction or purchase behavior.</li><li>distinguish the relationship between business strategy, marketing plan (esp. market segmentation and positioning) and marketing-mix.</li><li>analyze markets, develop a market segmentation and select viable target markets.</li><li>develop market mix policies (product, price, place, promotion) while ensuring that individual policies are complementary (integrated marketing).</li><li>apply key marketing tools in practice.</li></ul> <p>For dual students:</p> <p>Dual students are invited to bring their experiences and current marketing topics from their partner companies into the discussion in the respective chapters of the class. In this way, they learn to transfer theoretical methods into the practice of their partner companies.</p> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                    |            |
| <ul style="list-style-type: none"><li>Marketing fundamentals: customer orientation, purchase behaviour of consumers, purchase behaviour of organizations, customer relationship management, differences in B2B versus B2C marketing</li><li>Key terms and tools of business strategy</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                             |                    |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Market research, market segmentation, target market definition, positioning and differentiation</li> <li>• Product policy, incl. innovation, brand management, after-sales management</li> <li>• Price (and terms and conditions), incl. price determination process, price-demand-function, price differentiation and modification, value-pricing</li> <li>• Distribution policy, incl. sales channels, push vs. pull, vertical marketing systems, multichannel sales, introduction to retail and wholesale business</li> <li>• Communications (Promotion), incl. advertising, sales promotion, public relations, personal selling, direct marketing</li> <li>• Selected marketing topics, e.g. e-commerce, internet marketing, viral marketing</li> </ul> |
| <b>Literature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• KOTLER, Philip, Kevin Lane KELLER und Alexander CHERNEV, 2026. <i>Marketing management</i>. Harlow, Essex: Pearson. ISBN 1-292-46271-X, 978-1-292-46271-4</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Additional remarks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| No additional remarks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

| Business Information Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                      |                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | BusinfSyst_EGM                                       | Reg.-Nr.           | 20         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Study Programme                                      | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Engineering and Management                           | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | only summer term                                     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Zehbold, Cornelia                                    |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Zehbold, Cornelia                                    |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | English                                              | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5 ECTS / 4 SWS                                       |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Contact hours                                        | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Self-study                                           | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Total                                                | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Business Information Systems                         |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SU/Ü/Pr-Lecture with exercises and practical courses |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                      |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                      |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                      |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                    |            |
| Computer sciences                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                      |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                      |                    |            |
| <p>At the end of the course, students are able to</p> <ul style="list-style-type: none"><li>• assess contents, objectives and challenges of information systems in the business world, focusing on design, implementation, management and control of information and communication technology [ICT] as well as on the management of interfaces between systems and companies.</li><li>• distinguish between different types of information and communication systems and assess their suitability for various business contexts.</li><li>• earn in-depth knowledge about requirements for the effective and efficient use of ICT as well as about the importance of information systems for company success in the context of the increasing digitalization of economy and society.</li><li>• solve business problems in the field of information systems by applying systematic approaches and by identifying alternative solutions in teams.</li></ul> |                                                      |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                    |            |
| <ul style="list-style-type: none"><li>• The importance of information systems</li><li>• IT infrastructures and web technologies</li><li>• Databases and information management</li><li>• Operational information processing (ERP, SCM, CRM, etc.)</li><li>• E-procurement and e-commerce</li><li>• Business process management</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                      |                    |            |

- IT-enabled knowledge management
- Green IT
- IT-enabled decision making
- E-Society and political/legal aspects of information systems
- Applications and case studies: information systems in business practice
- Digitization of the economy and society

#### Literature

- LAUDON, Kenneth C., Jane Price LAUDON und Carol Guercio TRAVER, 2025. *Management Information Systems: Managing the Digital Firm*. London: Pearson Education Limited. ISBN 978-1-292-48259-0
- LAUDON, Kenneth C., Jane Price LAUDON und Detlef SCHODER, 2016. *Wirtschaftsinformatik: eine Einführung*. München: Pearson. ISBN 978-3-86894-269-9, 3-86894-269-6

#### Additional remarks

Note: A detailed breakdown of the workload (total 125 h) will be given in the first lecture. The exercises include web-based training and identifying alternative solutions in teams.

Bonus system: In the course exercises are held that lead to a bonus point for the examination depending on the quality of the solution. The maximum bonus points is based on APO.

Study abroad: Similar subjects are offered at many partner universities abroad. In English-speaking countries, they are offered under the title "Business Information Systems", "Management Information Systems" or simply "Information Systems".

## Controlling

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                             |                    |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EGM_CONTR_E                 | Reg.-Nr.           | 21         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Study Programme             | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Engineering and Management  | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | only summer term            | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Eisenberg, Andrea           |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Eisenberg, Andrea           |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | English                     | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5 ECTS / 4 SWS              |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Contact hours               | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Self-study                  | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Total                       | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Controlling                 |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SU/Ü-Lecture with exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                             |                    |            |
| <p>Students</p> <ul style="list-style-type: none"><li>understand the meaning of strategic management and the role of management accounting.</li><li>can apply the costing approaches target costing and activity-based costing to business cases.</li><li>can calculate different key financial indicators and interpret them.</li><li>can make investment decisions based on static and dynamic methods.</li><li>can prepare budgets, both static and a flexible budget, can perform a detailed variance analysis and can calculate the elements of the working capital life cycle.</li><li>can solve case studies by applying the knowledge acquired in the class.</li></ul> |                             |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                             |                    |            |
| <ul style="list-style-type: none"><li>Controlling and Management accounting</li><li>Strategic management and management accounting</li><li>Strategy formulation, implementation and evaluation</li><li>Modern costing approaches: Target Costing and Activity-based costing</li><li>Investment appraisal: Static and dynamic methods</li><li>Key Financial indicators, value-based and profitability ratios</li><li>Budgeting, budgeting process, static and flexible budgets, working-life cycle</li><li>Case studies</li></ul>                                                                                                                                               |                             |                    |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Literature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <ul style="list-style-type: none"><li>• WEETMAN, Pauline und Darren JUBB, 2024. <i>Financial and management accounting: an introduction</i>. Harlow, England: Pearson. ISBN 978-1-292-45704-8</li><li>• DAVID, Fred R., Forest R. DAVID und Meredith E. DAVID, 2025. <i>Strategic Management: concepts and cases : a competitive advantage approach</i>. Harlow: Pearson Education Limited. ISBN 978-1-292-74527-5</li><li>• GRANT, Robert M., 2025. <i>Contemporary strategy analysis</i>. Hoboken, NJ: Wiley. ISBN 978-1-394-25159-9</li></ul> |
| <b>Additional remarks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| No additional remarks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Selected topics in International Management

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                 |                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EGM_STIM_E                                      | Reg.-Nr.           | 22         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Study Programme                                 | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Engineering and Management                      | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | only summer term                                | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Schwandner, Gerd                                |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Hirl, Andreas; Lessig, Rudolf; Schwandner, Gerd |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | English                                         | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5 ECTS / 4 SWS                                  |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Contact hours                                   | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Self-study                                      | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Total                                           | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Selected topics in International Management     |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SU/Ü-Lecture with exercises                     |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |                    |            |
| mdIP - oral exam, 15 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                 |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                 |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                 |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                 |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                 |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                 |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                 |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                 |                    |            |
| <p>After completing the international management and the transfer pricing parts of the seminar, the students will be able to:</p> <ul style="list-style-type: none"><li>• explain and discuss key terms and challenges in conducting international business.</li><li>• analyze the environment that multinational enterprises face, incl. cultural differences, political influence/trade barriers, foreign exchange.</li><li>• evaluate options for companies to internationalize their business, including selection of markets and market entry modes.</li><li>• Analyse business development phases; identify customer profiles; formulate USP; compare positioning strategies; evaluate acquisition channels</li><li>• Identify risk categories; evaluate risks; build risk register; assess commercial consequences; integrate risks into pricing decisions</li><li>• Prepare BATNA/ZOPA; apply anchoring &amp; framing; use MESO strategies; plan concessions; analyse power dynamics; adapt behaviour interculturallly</li><li>• Explain intercultural frameworks; adapt communication; build trust; manage conflicts; bpply intercultural competence in sales</li><li>• have a sound understanding of strategic and digital procurement, risk management in procurement and the supply chain, and basic and advanced negotiation techniques</li><li>• have gained insight into strategy development, to weigh opportunities and risks for sound decisions, and to apply negotiation methods in practice</li></ul> |                                                 |                    |            |

- professionally prepare for and tactically implement all these topics, and to recognize and successfully shape the physiological and psychological connections in a global context

#### Content

Part by Prof. Schwandner:

- Introduction: globalization, international business, scenarios going forward
- Environment: cultural, political & legal, economical, society & ethics
- Trade and investment: trade theory, governmental influence, cross-national cooperation and agreements (bilateral, regional, global), the European Union, other regional trade blocs
- Foreign exchange: FX markets and instruments, the IMF, exchange-rate regimes, the Euro, business impact of FX rates
- Strategy and structure: international strategy analysis, country evaluation and selection, export-import, collaboration-direct investment, organization of international business

Part by Mr. Hierl:

- Business Development & Sales Model
- Risk Management in Industry & Automotive
- Advanced Negotiation Techniques in Sales & Purchasing
- Intercultural Sales Competence - Europe, Asia, Americas

Part by Mr. Lessig:

- Strategic & Digital Procurement: generic overall picture; systematic analysis and preparation; strategy development, definition, and design; potential of digitalisation
- Procurement & Supply Chain Risk Management: methods for considering and evaluating opportunities and risks; communication and body language as leadership tools for implementation
- Basic and Advanced Negotiation Concepts: factors influencing success and failure; negotiation strategies and tactics; conducting conversations and negotiations; dealing with disruptive elements; paths to agreement; sustainability of the processes; practical examples

#### Literature

- DANIELS, John D., Lee H. RADEBAUGH und Daniel P. SULLIVAN, 2013. *International Business*. 14. Auflage. Harlow: Pearson. ISBN 978-0-273-76695-7
- HOLLESEN, Svend, 2014. *Global Marketing*. Harlow: Pearson. ISBN 978-0-273-77316-0
- FISHER, Roger, William URY und Bruce PATTON, 2012. *Getting to Yes*. UK: Random House. ISBN 978-1-847-94093-3

#### Additional remarks

No additional remarks.

## Intercultural Studies

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                       |                    |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | IntCult_EGM                           | Reg.-Nr.           | 24         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Study Programme                       | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Engineering and Management            | Compulsory Subject | 6          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | only summer term                      | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | McDonald, James                       |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | McDonald, James                       |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | English                               | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5 ECTS / 4 SWS                        |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Contact hours                         | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Self-study                            | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Total                                 | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Intercultural Studies                 |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SU/Ü-Lecture with practical exercises |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                       |                    |            |
| Student research project without oral examination, 8 - 15 pages elaboration, 15 - 20 pages presentation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                       |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                       |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                       |                    |            |
| <p>After attending the lecture students can:</p> <ul style="list-style-type: none"><li>• understand and explain relevant theories of culture and intercultural communication.</li><li>• analyze case studies related to intercultural communication, including management styles and corporate cultures.</li><li>• apply theories and insights from case studies to a variety of intercultural communication contexts.</li><li>• identify and evaluate the influence of culture on communication processes in different settings.</li><li>• reflect on and explain the effects of culture on their own communication and the communication of others.</li><li>• demonstrate an enhanced ability to understand cultural differences and their impact on interpersonal and organizational communication.</li></ul> |                                       |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                    |            |
| <ul style="list-style-type: none"><li>• Concepts and definitions of culture and intercultural communication</li><li>• Cultural dimensions and models (e.g. Hofstede, Hall, Trompenaars)</li><li>• Verbal and non-verbal communication across cultures</li><li>• Cultural values, perceptions, stereotypes and intercultural awareness</li><li>• Intercultural challenges in international business environments</li><li>• Management styles and leadership across cultures</li><li>• Corporate cultures and their influence on communication</li></ul>                                                                                                                                                                                                                                                           |                                       |                    |            |

- Analysis and discussion of intercultural communication case studies
- Application of intercultural communication theories to real-world situations
- Reflection on personal cultural background and intercultural competence development

#### Literature

- HOFSTEDE, Geert, 2002. *Culture's consequences: comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks [u.a.]: Sage Publ. ISBN 0-8039-7324-1, 0-8039-7323-3
- HALL, Edward Twitchell, 1989. *Beyond culture*. New York [u.a.]: Doubleday. ISBN 978-0-385-12474-4, 0-385-12474-0
- TROMPENAARS, Fons und Charles HAMPDEN-TURNER, 2020. *Riding the waves of culture: understanding diversity in global business*. London; Boston: Nicholas Brealey Publishing. ISBN 978-1-529-34618-3, 1-529-34618-5
- STOUDEMIRE, Tyronne, 2024. *Diversity Done Right: Navigating Cultural Difference to Create Positive Change in the Workplace*. Newark: John Wiley & Sons, incorporated. ISBN 978-1-394-23070-9
- LUSTIG, Myron W. und Jolene KOESTER, c2012. *Intercultural competence: interpersonal communication across cultures*. Boston [u.a.]: Pearson Prentice Hall. ISBN 978-0-205-86176-7

#### Additional remarks

No additional remarks.

| Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PROJ_EGM                   | Reg.-Nr.           | 25         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Study Programme            | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering and Management | Compulsory Subject | 6          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | winter and summer term     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Meintrup, David            |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Reuter, Stefan             |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | English                    | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5 ECTS / 4 SWS             |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Contact hours              | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Self-study                 | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Total                      | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Project                    |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | P-Project                  |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |                    |            |
| PA-Project report oral presentation (15 min) written elaboration (5-25 pages)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |                    |            |
| Regular attendance is mandatory for the successful execution of the team-based project work. The specific requirements regarding mandatory attendance are determined by the respective instructor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                    |            |
| <p>After completing the module, students will be able to:</p> <ul style="list-style-type: none"><li>independently manage a semester-long, complex project, demonstrating responsibility and self-direction.</li><li>acquire new knowledge rapidly and adapt to evolving project challenges.</li><li>analyze and solve multifaceted problems by integrating technical and business perspectives, using methods and tools from their foundational studies.</li><li>apply project management strategies and collaborate effectively within a team.</li><li>communicate, present, and document project results convincingly to stakeholders.</li></ul> <p>For dual students:</p> <p>Due to their broader practical experience and the application of theoretical content in their companies, after passing the module dual students are capable to deal with more depth with the project task and to solve more complex problems. An increased methodological and social competency leads to a deeper understanding of team processes.</p> |                            |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                    |            |
| <ul style="list-style-type: none"><li>Team project on selected topic for one semester</li><li>Interdisciplinary focus (engineering &amp; management)</li><li>Apply project management methods and tools</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                    |            |

- Analyze and structure complex, practical problems
- Combine technical and business knowledge
- Collaborate in teams to solve challenges
- Document, present, and reflect on project results

#### Literature

- HEMMRICH, Angela, HARRANT, Horst, 2015. *Projektmanagement: in 7 Schritten zum Erfolg* [online]. München: Hanser. PDF e-Book. ISBN 978-3-446-44733-2, 978-3-446-44620-5. Verfügbar unter: <https://doi.org/10.3139/9783446447332>.

#### Additional remarks

For dual students:

Dual partner companies are invited to bring in project topics which are worked on by their dual students. Potentially, non-dual students can participate in these projects if capacity allows for this. It is possible to do projects in the practical phase, given the content-wise suitability. The process of recognition and grading follows the standard credit transfer process documented in the guideline.

| Automation Technologies                                                                                                                                                                                                                                                                                                                                                                   |                                                      |                    |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                       | AUT_EGM                                              | Reg.-Nr.           | 26         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                | Study Programme                                      | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                           | Engineering and Management                           | Compulsory Subject | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                          | only winter term                                     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                    | Großmann, Daniel                                     |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                               | Großmann, Daniel                                     |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                   | English                                              | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                       | 5 ECTS / 4 SWS                                       |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                  | Contact hours                                        | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                           | Self-study                                           | 78 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                           | Total                                                | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                    | Automation Technologies                              |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                             | SU/Ü/Pr-Lecture with exercises and practical courses |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                              |                                                      |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                        |                                                      |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                            |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                            |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                 |                                                      |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                    |            |
| <p>After attending the lecture, students will be able to</p> <ul style="list-style-type: none"><li>• have a basic understanding of automation technology.</li><li>• recognise automation potential and the demand for automation.</li><li>• have a basic understanding of information and communication technology in automation systems.</li><li>• develop automation systems.</li></ul> |                                                      |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                   |                                                      |                    |            |
| <ul style="list-style-type: none"><li>• Basics of industrial processes and control</li><li>• Sensors and actuators</li><li>• Automation controller</li><li>• Programming of automation controllers (with exercise)</li><li>• Operation and monitoring</li><li>• Industrial communication</li><li>• Development of automation systems</li></ul>                                            |                                                      |                    |            |
| Literature                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                    |            |
| <ul style="list-style-type: none"><li>• DEY, Chanchal, SEN, Sunit Kumar, 2020. <i>Industrial automation technologies</i> [online]. Boca Raton; London ; New York: CRC Press, Taylor &amp; Francis Group. PDF e-Book. ISBN 978-0-429-29934-6. Verfügbar unter: <a href="https://doi.org/10.1201/9780429299346">https://doi.org/10.1201/9780429299346</a>.</li></ul>                        |                                                      |                    |            |

|  |  |                                                                       |
|--|--|-----------------------------------------------------------------------|
|  |  | Engineering and Management<br>(Module Handbook SPO SS 15, WS 2026/27) |
|  |  |                                                                       |

|                           |
|---------------------------|
| <b>Additional remarks</b> |
| No additional remarks.    |

| Production Planning and Logistics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |                    |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EGM_PPL_E                         | Reg.-Nr.           | 27         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Study Programme                   | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Engineering and Management        | Compulsory Subject | 4          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | only summer term                  | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Jattke, Andreas                   |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Jattke, Andreas                   |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | English                           | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5 ECTS / 4 SWS                    |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Contact hours                     | 46 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Self-study                        | 79 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Total                             | 125 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Production Planning and Logistics |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SU/Ü-Lecture with exercises       |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   |                    |            |
| schrP90 - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                   |                    |            |
| <p>The students can:</p> <ul style="list-style-type: none"><li>• select production planning and control methodologies in different branches and sizes of industry.</li><li>• distinguish production planning philosophies push versus pull.</li><li>• define adequate KPI's to control the success of production planning methodologies.</li><li>• define production planning methodologies in the whole supply chain including external customers and suppliers.</li><li>• integrate the meaning of PPS systems in line with digitalisation in industry 4.0.</li></ul> <p>For dual students:</p> <p>Dual students have reflected experiences from their partner companies in the light of the learned methods of production planning and logistics. They are capable to explain their application in concrete practice examples from their partner companies. Additionally, they can analyze and judge the method of production planning implemented in their partner company.</p> |                                   |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                   |                    |            |
| <ul style="list-style-type: none"><li>• PPC Strategies</li><li>• Production Programme Planning and Lot sizing</li><li>• Order and Capacity Scheduling</li><li>• Integration of PPC in ERP and Industry 4.0</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                    |            |

|                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Production Controlling and KPIs</li> <li>• Different examples from industry</li> </ul>                                                                                                                    |
| <b>Literature</b>                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>• BUZACOTT, John A., 2013. <i>Production planning and control: basics and concepts</i>. München: Oldenbourg. ISBN 978-3-486-72247-5, 3-486-72247-6</li> </ul>                                               |
| <b>Additional remarks</b>                                                                                                                                                                                                                          |
| <p>Dual students are invited to bring in different elements of production planning and logistics from their partner companies into the module. In this way they transfer the competencies acquired in class to the reality of their companies.</p> |

## Internship

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                    |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | EGM_INTSHIP_E              | Reg.-Nr.           | 30         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Study Programme            | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Engineering and Management | Compulsory Subject | 5          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | winter and summer term     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Schneider, Yvonne          |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | English                    | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 24 ECTS / 0 SWS            |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Contact hours              | 0 h                |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Self-study                 | 600 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Total                      | 600 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Internship                 |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pr-Internship              |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                    |            |
| internship report                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                            |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |                    |            |
| <ul style="list-style-type: none"><li>• Internship report to describe content, character and key learnings of internship.</li><li>• The practical studies semester must be completed in a non-German speaking foreign country.</li><li>• Alternatively, the practical studies semester may be completed in German-speaking countries if a connection to international business is guaranteed (e.g. through work in the areas of international product management, global product development, international marketing, international production and logistics).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                    |            |
| <p>After completing the internship semester, students will be able to:</p> <ul style="list-style-type: none"><li>• describe and explain technical and business processes and their interrelations within a company.</li><li>• identify and reflect on typical tasks and responsibilities of management engineers in professional practice.</li><li>• apply discipline-specific knowledge, methods, and tools acquired during the degree program to real-world tasks and problems.</li><li>• develop and present application-oriented solutions using scientifically grounded approaches,</li><li>• work independently on assigned tasks and complete them within defined timeframes.</li><li>• critically reflect on their own professional behavior and identify areas for personal and professional development in the context of their future career.</li></ul> <p>Dual students do their internship at their partner company. They benefit from their broader and deeper previous practical experience and from their knowledge of the company and work on more challenging topics. A systematic reflection of the linking of study contents and practice at the company in the context of the internship takes place.</p> |                            |                    |            |

### Content

The internship semester enables students to gain practical insights into the professional field of industrial engineering and management. The focus of the internship is aligned with the operational tasks of the host company and builds upon the technical, economic, and methodological foundations taught in the academic program. Typical contents of the internship semester include:

- gaining familiarity with technical and business processes and understanding their interdependencies within the company,
- working on practical assignments in the field of industrial engineering and management,
- applying and deepening engineering and management knowledge in company-based projects,
- gaining insight into company-specific workflows, organizational structures, and project management practices,
- reflecting on one's own professional role and further developing personal and social competencies in a real-world work context.

According to §29 (3) APO dual students do their internships at their partner company. In their internship report they report on the link between study program and practical experiences.

### Literature

Will be specified at the beginning

### Additional remarks

- The internship can only be conducted in companies which are approved.
- The qualifications of the supervisor should be on the same level as the degree of the respective study programme.
- Universities and associated organisations are not permitted to host internships.

| Seminar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                   |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------|------------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EGM_SEM_E                         | Reg.-Nr.          | 31               |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Study Programme                   | Module type       | Semester         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Engineering and Management        | Pflichtfach       | 5                |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | winter and summer term            | Module duration   | 1 semester       |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Meintrup, David                   |                   |                  |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Huber, Sina; Meintrup, David; NN, |                   |                  |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Deutsch/Englisch                  | Language of exams | Deutsch/Englisch |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 ECTS / 2 SWS                    |                   |                  |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Contact hours                     | 23 h              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Self-study                        | 27 h              |                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Total                             | 50 h              |                  |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Seminar                           |                   |                  |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | S-Seminar                         |                   |                  |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                   |                   |                  |
| LN - ohne/mit Erfolg teilgenommen                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   |                   |                  |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                   |                  |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |                   |                  |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                   |                  |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |                   |                  |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                   |                   |                  |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                   |                   |                  |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                   |                   |                  |
| <p>The practical seminar imparts professionally oriented competencies relevant to the work of an engineer. At the end of the course, students can:</p> <ul style="list-style-type: none"><li>independently work on complex technical tasks within a team.</li><li>apply their specialist knowledge to concrete questions.</li><li>strengthen their social, personal, and methodological competencies (e.g., through moderation and presentation).</li><li>implement technical tasks in a team and solve problems collaboratively.</li><li>represent real-world processes through simulations.</li><li>use alternative teaching and learning platforms.</li></ul> <p>For dual-study students, the more extensive practical experience means they already possess advanced professionally oriented competencies. The selected seminars can therefore explore the respective topics in greater depth or focus specifically on components that can be further developed.</p> |                                   |                   |                  |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                   |                  |
| <ul style="list-style-type: none"><li>A three-day block seminar on profession-oriented competencies, in which students work together in teams to complete a given task.</li><li>The seminar may include workshops, seminars, excursions, and training courses, and - alongside technical tasks - covers topics such as moderation, presentation, conflict management, rhetoric, academic writing, ethics of technological issues, and entrepreneurship.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                   |                   |                  |

For dual-study students

- Due to their extensive practical experience, dual-study students have the option to shorten the seminar requirement to a one-day event. This one-day seminar may be selected from offerings provided by the company, the Career Service, or other providers, as long as the content is equivalent to the faculty's offering.
- The minimum duration of the one-day seminar is six hours excluding breaks, and it may also be composed of multiple individual seminars.

#### Literature

Will be specified at the beginning

#### Additional remarks

Prüfungsleistung.

1 Leistungsnachweis für die aktive Teilnahme am 3-tägigen Seminar Bewertung „mit Erfolg“ (m. E.) / „ohne Erfolg“ (o. E.)

| Project- and Quality-Management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |                    |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PQM_EGM                         | Reg.-Nr.           | 32         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Study Programme                 | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Engineering and Management      | Compulsory Subject | 6          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | only summer term                | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Pelzel, Robert                  |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Bauer, Rudolf                   |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | English                         | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4 ECTS / 4 SWS                  |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Contact hours                   | 47 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Self-study                      | 53 h               |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Total                           | 100 h              |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Project- and Quality-Management |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | SU/Ü-lecture with exercises     |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                 |                    |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                 |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |                    |            |
| Successful participation with presence duty in the lessons.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                 |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                 |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                 |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                 |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                 |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                 |                    |            |
| <p>By attending the course, the students will be able to:</p> <ul style="list-style-type: none"><li>• understand basic principles and methods of Project Management.</li><li>• structure and plan an industrial or engineering project.</li><li>• understand the requirements regarding a professional Project Manager.</li><li>• know main characteristics of Agile Project Management.</li><li>• understand basics of a comprehensive Quality Management.</li><li>• know specific Quality methods, which shall be applied in various use cases.</li></ul> <p>For dual students:</p> <p>Dual students have reflected experiences from their partner companies in the light of the learned methods and are capable to demonstrate the practical application of the methods in practical examples from their companies.</p> |                                 |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                 |                    |            |
| <ul style="list-style-type: none"><li>• Project kick-off procedures</li><li>• Relevant project organisation, RFQ, Func Spec.</li><li>• Setting right project goals, SMART</li><li>• Planning of actions, WBS, GANTT, MPM, CPM, CP</li><li>• Starting project work and controlling, BEA, EV, MS-Trends</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |                    |            |

- Organizing acceptance tests
- Project review and lessons learned
- Basics of quality management
- ISO 9001 and other standards
- TQM, EQA, LEP
- Main tools, FMEA, QFD, SPC, BCG
- Lean six sigma

#### Literature

- SCHULZ, Marcus und Tinka MEIER, 2025. *Project Management: a practical guideline for today's project managers*. - ICB 4.0. Tübingen: UVK. ISBN 978-3-381-13481-6
- 2024. *The Standard for Program Management - Fifth Edition*. Chicago: Project Management Institute. ISBN 9781628258141
- KERZNER, Harold, 2025. *Project management: a systems approach to planning, scheduling, and controlling*. Hoboken, New Jersey: Wiley. ISBN 978-1-394-29003-1
- KÖSTER, Kathrin, 2009. *International project management*. London: SAGE Publications Ltd. ISBN 978-1-4129-4620-9, 978-1-4129-4621-6
- OTTMANN, Roland und Heinz SCHELLE, 1. *Projektmanagement: die besten Projekte, die erfolgreichsten Methoden*. München: Beck. ISBN 978-3-406-57175-6, 3-406-57175-1
- BURGHARDT, Manfred, 2018. *Projektmanagement: Leitfaden für die Planung, Überwachung und Steuerung von Projekten*. 10. Auflage. Erlangen: Publicis Publishing. ISBN 978-3-89578-472-9, 3-89578-472-9

#### Additional remarks

No additional remarks.

| Bachelor Thesis Seminar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                    |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EGM_BSEM_E                 | Reg.-Nr.           | 29         |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Study Programme            | Module type        | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Engineering and Management | Compulsory Subject | 7          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | winter and summer term     | Module duration    | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Eisenberg, Andrea          |                    |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |                    |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | English                    | Language of exams  | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 ECTS / 2 SWS             |                    |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Contact hours              |                    | 23 h       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Self-study                 |                    | 52 h       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Total                      |                    | 75 h       |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Bachelor Thesis Seminar    |                    |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | S-Seminar                  |                    |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                    |            |
| LN - participation without/with success                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                    |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                    |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                    |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |                    |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                            |                    |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                            |                    |            |
| <p>After attending this module, students are able to:</p> <ul style="list-style-type: none"><li>• know methods of scientific work.</li><li>• conduct systematic literature research.</li><li>• compile a clear structure and high-level table of content for their thesis.</li><li>• conduct expert discussions about the structure and storyline of their thesis.</li></ul> <p>Dual students additionally acknowledge the regulations of their partner company regarding the preparation of scientific work. They must ensure that the topic and the structure of their thesis is agreed between their advisor in the company and the supervising professor at the university.</p> |                            |                    |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                    |            |
| <p>Introduction</p> <ul style="list-style-type: none"><li>• Scientific and methodological requirements</li><li>• Relevant formal regulations</li><li>• Methods of research and documentation (incl. introduction by the library)</li></ul> <p>Identification of a topic</p> <p>Getting started and organizing:</p> <ul style="list-style-type: none"><li>• Getting in contact with companies</li></ul>                                                                                                                                                                                                                                                                              |                            |                    |            |

- Designing a project plan
- Defying a structure / high-level table of content
- Registration of the thesis

#### Literature

- BOOTH, Wayne C. und andere, 2024. *The craft of research*. Chicago; London: The University of Chicago Press. ISBN 978-0-226-82667-7, 978-0-226-83388-0
- HOLTOM, Daniel und Elizabeth M. FISHER, 2011. *Enjoy writing your science thesis or dissertation! A step-by-step guide to planning and writing dissertations and theses for undergraduate and graduate science students*. London: Imperial College Press. ISBN 1-86094-090-0, 1-86094-207-5

#### Additional remarks

No additional remarks.

## Bachelor Thesis

|                            |                            |                        |                 |
|----------------------------|----------------------------|------------------------|-----------------|
| <b>Module abbreviation</b> | EGM_BTTHESIS               | <b>Reg.-Nr.</b>        | 29              |
| <b>Curriculum</b>          | <b>Study Programme</b>     | <b>Module type</b>     | <b>Semester</b> |
|                            | Engineering and Management | Compulsory Subject     | 7               |
| <b>Module frequency</b>    | winter and summer term     | <b>Module duration</b> | 1 semester      |

|                                |                    |                          |         |
|--------------------------------|--------------------|--------------------------|---------|
| <b>Responsible for module</b>  | Eisenberg, Andrea  |                          |         |
| <b>Lecturer(s)</b>             |                    |                          |         |
| <b>Language of instruction</b> | English            | <b>Language of exams</b> | English |
| <b>Credit points / SWS</b>     | 12 ECTS / 0 SWS    |                          |         |
| <b>Workload</b>                | Contact hours      |                          | 0 h     |
|                                | Self-study         |                          | 300 h   |
|                                | Total              |                          | 300 h   |
| <b>Subjects of the module</b>  | Bachelor Thesis    |                          |         |
| <b>Lecture types</b>           | BA-Bachelor Thesis |                          |         |

### Examinations

Bachelor's Thesis

### Additional explanations regarding examinations

None

### Prerequisites according examination regulation

None

### Recommended prerequisites

None

### Objectives

After completing his/her bachelor thesis, students can

- analyze and solve an engineering and/or management related topic using scientific methods within an appropriate timeframe.
- apply scientific engineering and/or management methods.
- work self-dependent and solve the given problem in a structured and creative manner.

Dual students are able to

- analyze a problem present in their partner company using scientific methods and propose a solution.
- present and defend their graduation work in a way suitable for management.

### Content

- Topic of the thesis shall preferably be a practical topic provided by a company
- The Bachelor thesis work is supervised by a THI professor
- The thesis work will be accompanied by two evaluators, one of them being responsible for the appraisal
- The Bachelor thesis shall comprise a workload of approximately 300 hours

Dual students:

The Bachelor thesis must be done in cooperation with the partner company. The student finalizes the topic together with his/her advisor at the company. The results are presented to the dual partner and the supervising professor.

|  |  |                                                                       |
|--|--|-----------------------------------------------------------------------|
|  |  | Engineering and Management<br>(Module Handbook SPO SS 15, WS 2026/27) |
|  |  |                                                                       |

|                                                   |
|---------------------------------------------------|
| <b>Literature</b>                                 |
| Will be specified at the beginning of the course. |
| <b>Additional remarks</b>                         |
| No additional remarks.                            |

## 5.2 Foreign Languages

## Chinese A1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                   |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SZ_CHIN_A1                                   | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | only winter term                             | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Lei, Meng                                    |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Lei, Meng                                    |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | German                                       | Language of exams | Chinese    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Self-study                                   | 79 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Total                                        | 126 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Chinese A1                                   |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SU/Ü - lecture with integrated exercises     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                              |                   |            |
| <p>After attending the course, students (without prior knowledge) will be able to</p> <ul style="list-style-type: none"><li>• develop an initial understanding of the structure of Chinese writing and language.</li><li>• recognize and distinguish the four tones of Mandarin Chinese.</li><li>• read and write basic Chinese characters correctly and form simple sentences with them.</li><li>• introduce themselves in short sentences and talk about simple topics such as family, food, daily routine, or weather.</li><li>• recognize basic cultural differences (e.g., in greetings or politeness).</li></ul> |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                   |            |
| <ul style="list-style-type: none"><li>• Introducing yourself</li><li>• Nationality</li><li>• Telling the time</li><li>• Going to a restaurant</li><li>• Shopping</li><li>• Family</li><li>• Phrases for using the telephone</li><li>• Going to the doctor</li></ul>                                                                                                                                                                                                                                                                                                                                                    |                                              |                   |            |

|                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Leisure activities</li><li>• Weather</li></ul>                                                                                    |
| <b>Literature</b>                                                                                                                                                         |
| <ul style="list-style-type: none"><li>• ZHU, Xiaoxing, 2011. <i>Chinesisch erleben: Leben in China</i>. Beijing: Higher Education Press. ISBN 978-7-04-019054-0</li></ul> |
| <b>Additional remarks</b>                                                                                                                                                 |
| No remarks.                                                                                                                                                               |

## English for Business and Engineering 1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                              |                   |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | EnglBusiness1_E                              | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | only winter term                             | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Reicherstorfer, Anja                         |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Reicherstorfer, Anja                         |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | English                                      | Language of exams | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Self-study                                   | 78 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Total                                        | 125 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | English for Business and Engineering 1       |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | SU/Ü - lecture with integrated exercises     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                   |            |
| <p>Students are able to:</p> <ul style="list-style-type: none"><li>• handle various situations they might encounter in today's business world, including meetings and negotiations.</li><li>• write effective and accurate business correspondence (enquiry, offer, order).</li><li>• give a presentation on a current international business topic or a technical innovation and lead a discussion on the topic.</li><li>• know presentation skills including effective structuring, body language, time management and describing business trends (describing graphs).</li><li>• use visual aids for effective presentation of statistics and numbers.</li><li>• develop Business English vocabulary.</li></ul> |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
| <ul style="list-style-type: none"><li>• Reading and analysis of Business and Engineering texts</li><li>• Listening skills practice</li><li>• Writing basic business texts</li><li>• How to summarize a text</li><li>• Business &amp; Engineering vocabulary</li><li>• Group work in role plays and case studies</li></ul>                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |

|                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Selected business skills: presentations, meetings, negotiations, etc.</li> </ul>                                                                                                                                                                  |
| <b>Literature</b>                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>DUBICKA, Iwonna, 2019. Business Partner B2+: Coursebook. Hallbergmoos: Pearson Education. ISBN 978-3-86894-814-1, 978-3-86894-813-4</li> <li>BONAMY, David, 2011. <i>Technical English 4, Course Book</i>. Pearson. ISBN 9781408229552</li> </ul> |
| <b>Additional remarks</b>                                                                                                                                                                                                                                                                |
| The course contains an online part. Every student must hold a presentation in class.                                                                                                                                                                                                     |

## English for Business and Engineering 3

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                   |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | EngBusiness3_EG                              | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | only winter term                             | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Reicherstorfer, Anja                         |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Reicherstorfer, Anja                         |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | English                                      | Language of exams | English    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Self-study                                   | 79 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total                                        | 126 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | English for Business and Engineering 3       |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SU/Ü - lecture with integrated exercises     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
| <p>After attending the seminar students will be able to:</p> <ul style="list-style-type: none"><li>improve business and engineering communication skills – communicate clearly and professionally in various business and engineering contexts.</li><li>expand business and technical vocabulary by learning and practicing industry-specific terminology and expressions.</li><li>develop writing skills in writing emails, reports, proposals, and other business documents.</li><li>enhance listening and speaking skills – improve understanding of spoken English in meetings, presentations, and negotiations.</li><li>improve presentation skills – Learn how to prepare and deliver effective business presentations.</li><li>achieve personal and professional growth, supporting their career development through improved language proficiency.</li></ul> |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| <ul style="list-style-type: none"><li>CV and application form</li><li>Most common job interview questions</li><li>How to write an argumentative essay</li><li>Product design specification document</li><li>Product recall notice</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |                   |            |

|                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Enquiry</li> <li>• Offer</li> <li>• Orders</li> <li>• Letter of complaint</li> <li>• Negotiation skills</li> </ul> |
| <b>Literature</b>                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• BONAMY, David, 2011. <i>Technical English 4, Course Book</i>. Pearson. ISBN 9781408229552</li> </ul>               |
| <b>Additional remarks</b>                                                                                                                                   |
| No remarks.                                                                                                                                                 |

## French A1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                   |            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SZ_FRANZ_A1                                  | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | only winter term                             | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Abdallah, Zahra                              |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Abdallah, Zahra                              |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | German                                       | Language of exams | French     |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Self-study                                   | 79 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Total                                        | 126 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | French A1                                    |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SU/Ü - lecture with integrated exercises     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
| <p>After attending this course, students should be able to</p> <ul style="list-style-type: none"><li>• hold simple conversations, for example, introduce themselves, ask for directions, or talk about a hobby.</li><li>• expand their vocabulary for everyday situations, such as family, food, shopping, and leisure.</li><li>• form and understand simple sentences, especially short, clear statements.</li><li>• know the most important grammar rules, such as the use of the present tense, personal pronouns, and how to ask simple questions.</li><li>• read and understand short texts, such as simple advertisements or emails.</li><li>• write simple texts themselves, such as a short message or a postcard.</li></ul> |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| <ul style="list-style-type: none"><li>• Greetings and Introductions (name, age, origin/background), Farewells (Bonjour, Salut, Au revoir), polite expressions (please, thank you, excuse me/sorry)</li><li>• People and family (naming family members, talking about oneself and others)</li><li>• Numbers and dates (numbers from 0 to 100, days of the week, months, seasons, dates and time)</li><li>• Everyday situations (shopping, ordering in a restaurant, giving and asking for directions)</li><li>• Food and drinks (naming food and beverages, talking about preferences)</li><li>• Leisure time and hobbies (talking about leisure activities, forming simple sentences about hobbies)</li></ul>                        |                                              |                   |            |

- Basic grammar: the present tense of the most important verbs (*être, avoir, aller, faire*), personal pronouns, simple questions and negations, articles (*un, une, le, la*)
- Everyday communication (conducting short conversations, reading and writing simple texts such as post-cards and short emails)

#### Literature

- SCHREITMÜLLER, Fabienne, 2017. Langenscheidt fit in 30 Tagen - Französisch: Niveau A1-A2: der schnelle Sprachkurs mit Buch, 2 Audio-CDs und Audio-Wortschatztrainer auf 1 MP3-CD: Lernkalender mit Tipps vom Coach und Trainingsplan. München; Wien: Langenscheidt. ISBN 978-3-468-28029-0
- GRÉGOIRE, Maïa, 2015. *Grammaire progressive du français: niveau débutant complet; avec 200 exercices*. Paris: CLE International / SEJER. ISBN 978-209-038156-6, 978-3-12-529948-1

#### Additional remarks

No remarks.

| French A2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                           |                   |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SZ_FRANZ_A2                               | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Study Programme                           | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Engineering and Management (SPO WS 26/27) | Foreign Language  | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | only winter term                          | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Abdallah, Zahra                           |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Abdallah, Zahra                           |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | French                                    | Language of exams | French     |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5 ECTS / 4 SWS                            |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Contact hours                             | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Self-study                                | 78 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Total                                     | 125 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | French A2                                 |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SU/Ü - lecture with integrated exercises  |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                           |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           |                   |            |
| <p>After attending the course, students can</p> <ul style="list-style-type: none"><li>understand short, simple everyday conversations (e.g. about family, hobbies, shopping).</li><li>understand short, simple texts (e.g. emails, postcards, advertisements, directions).</li><li>conduct short conversations and ask and answer simple questions.</li><li>use simple sentence structures and learned expressions.</li><li>master the present tense of regular and common irregular verbs, the use of the <i>passé composé</i> and <i>futur proche</i>, personal pronouns, simple relative clauses, and the comparison of adjectives.</li><li>use polite expressions and culturally appropriate phrases (e.g. greetings and expressions of thanks).</li></ul> |                                           |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                           |                   |            |
| <ul style="list-style-type: none"><li>Passé composé, Imparfait, Futur, Conditionnel, Impératif, Pronoms personnels, déterminants et pronoms équivalents, adverbes, prop. subordonnées, comparatif et superlatif</li><li>Organising holidays and travel</li><li>Writing letters, including application letters</li><li>Work organisation in a company, professional correspondence, telephone conversations, meetings</li></ul>                                                                                                                                                                                                                                                                                                                                 |                                           |                   |            |

|                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Literature</b>                                                                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"><li>• SCHREITMÜLLER, Fabienne, 2017. Langenscheidt fit in 30 Tagen - Französisch: Niveau A1-A2: der schnelle Sprachkurs mit Buch, 2 Audio-CDs und Audio-Wortschatztrainer auf 1 MP3-CD: Lernkalender mit Tipps vom Coach und Trainingsplan. München; Wien: Langenscheidt. ISBN 978-3-468-28029-0</li></ul> |
| <b>Additional remarks</b>                                                                                                                                                                                                                                                                                                                    |
| No remarks.                                                                                                                                                                                                                                                                                                                                  |

## German A1 Intensive

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                              |                   |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | GermanA1_E                                   | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  | 1          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | nur Wintersemester                           | Module duration   | 1 Semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Donovan, Elke                                |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Donovan, Elke                                |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | English                                      | Language of exams | German     |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Self-study                                   | 79 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Total                                        | 126 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | German A1 Intensive                          |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | SU/Ü - seminaristischer Unterricht/Übung     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |                   |            |
| LN - schriftliche Prüfung, 90 Minuten                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                   |            |
| Keine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                   |            |
| Keine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                   |            |
| Keine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                   |            |
| <p>Students are able to</p> <ul style="list-style-type: none"><li>understand and use familiar everyday expressions and simple phrases, which relate to the satisfaction of concrete needs</li><li>introduce themselves and others,</li><li>ask and answer questions about personal details (name, origin, interests, ...)</li><li>communicate in a simple manner</li></ul>                                                                                                                                                                                                                    |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                   |            |
| <p>Acquisition of most fundamental language concepts allowing students to communicate in everyday situations, evaluate situations, communicate wishes and preferences and gain basic communication skills, e.g.</p> <ul style="list-style-type: none"><li>alphabet, numbers and ordinal numbers</li><li>pronunciation</li><li>word types (nouns, verbs, adjectives, pronouns, prepositions)</li><li>tenses (present tense, perfect tense, past tense)</li><li>most common regular and irregular verbs, reflexive verbs, modal verbs, separable verbs</li><li>negation and questions</li></ul> |                                              |                   |            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Literature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"><li>• KRENN, Wilfried und Herbert PUCHTA, 2015. <i>Motive Kompaktkurs DaF, Kursbuch, Lektion 1 - 8, Deutsch als Fremdsprache</i>. München: Hueber. ISBN 978-3-19-001880-2</li><li>• KRENN, Wilfried und Herbert PUCHTA, 2015. <i>Motive Kompaktkurs DaF, Arbeitsbuch, Lektion 1 - 8, Deutsch als Fremdsprache</i>. München: Hueber. ISBN 978-3-19-031880-3</li><li>• FANDRYCH, Christian und Ulrike TALLOWITZ, 2008. <i>Klipp und klar, Übungsgrammatik Grundstufe Deutsch in 99 Schritten</i>. Stuttgart: Klett. ISBN 978-3-12-675322-7; 978-3-12-675327-2; 978-3-12-675427-9</li></ul> |
| <b>Additional remarks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| No remarks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## German B1 Intensive

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                              |                   |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | GermanB1_EG                                  | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  | 3          |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | only winter term                             | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Nehir, Mehmet                                |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Nehir, Mehmet                                |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | German                                       | Language of exams | German     |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Self-study                                   | 78 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Total                                        | 125 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | German B1 Intensive                          |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SU/Ü - lecture with integrated exercises     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                              |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                              |                   |            |
| <p>Students are able to</p> <ul style="list-style-type: none"><li>improve communication skills to deal with everyday situations in Germany.</li><li>understand information (weather, family, how to plan your vacation).</li><li>express and represent their own opinion.</li><li>compare things.</li><li>be polite and hand out advice.</li></ul>                                                                                                                                                                                       |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |                   |            |
| <p>Acquisition of fundamental language concepts allowing students to express themselves simply and coherently on familiar topics of personal interest (about personal experiences, events, dreams, hopes, objectives):</p> <ul style="list-style-type: none"><li>passive voice</li><li>prepositions (local, modal, temporal)</li><li>modal verbs, separable verbs, subjunctive II</li><li>reflexive verbs (acusative, dative)</li><li>past tense (Perfekt, Präteritum)</li><li>declination of adjectives, adjectives of degree</li></ul> |                                              |                   |            |

- prefixes
- adverbs
- infinitive clause, reported questions, subordinate clause, relative clause, conjunctions
- pronouns (possessive, demonstrative)
- cases (genitive, dative, accusative)
- reading and listening comprehensions
- role plays

#### Literature

- KRENN, Wilfried und Herbert PUCHTA, 2015. *Motive B1. Kompaktkurs DaF: Deutsch als Fremdsprache*. München: Hueber Verlag.

#### Additional remarks

No remarks.

## Spanish B1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                              |                   |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------------|------------|
| Module abbreviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SZ_SPAN_B1                                   | Reg.-Nr.          | 6          |
| Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Study Programme                              | Module type       | Semester   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Engineering and Management<br>(SPO WS 26/27) | Foreign Language  |            |
| Module frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | only winter term                             | Module duration   | 1 semester |
| Responsible for module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Antràs Solè, Teresa                          |                   |            |
| Lecturer(s)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Antràs Solè, Teresa                          |                   |            |
| Language of instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Spanish                                      | Language of exams | Spanish    |
| Credit points / SWS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5 ECTS / 4 SWS                               |                   |            |
| Workload                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Contact hours                                | 47 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Self-study                                   | 79 h              |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Total                                        | 126 h             |            |
| Subjects of the module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Spanish B1                                   |                   |            |
| Lecture types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SU/Ü - lecture with integrated exercises     |                   |            |
| Examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |                   |            |
| LN - written exam, 90 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                              |                   |            |
| Additional explanations regarding examinations                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                   |            |
| Prerequisites according examination regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                   |            |
| Recommended prerequisites                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                   |            |
| None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                   |            |
| Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                              |                   |            |
| <p>After attending the module courses, participants can:</p> <ul style="list-style-type: none"><li>• express themselves clearly and coherently about experiences, opinions, and plans.</li><li>• understand longer texts on every day or professional topics.</li><li>• report on past events and formulate hypotheses.</li><li>• participate in discussions both orally and in writing (e.g. in class or online).</li><li>• produce different types of texts (e.g. emails, reports, and blog posts).</li></ul>           |                                              |                   |            |
| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                              |                   |            |
| <ul style="list-style-type: none"><li>• Narrating stories or anecdotes in the past</li><li>• Cultural differences and social issues</li><li>• Environment, consumption, and sustainable living</li><li>• Travel experiences and intercultural communication</li><li>• Knowledge of interculturality in the workplace</li><li>• Grammar: <i>Pretérito imperfecto</i>, <i>pretérito indefinido</i>, <i>pluscuamperfecto</i>, and <i>subjunctive</i>; conditional clauses</li><li>• Temporal and causal connectors</li></ul> |                                              |                   |            |

|                                                                                                                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Literature</b>                                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"><li>XICOTA TORT, Núria und Encarnación GUERRERO GARCÍA, 2003. Universo.ele B1 Spanisch für Studierende/Kurs- und Arbeitsbuch plus interaktive Version. München: Hueber Verlag. ISBN 978-3-19-364333-9</li></ul> |
| <b>Additional remarks</b>                                                                                                                                                                                                                         |
| No remarks.                                                                                                                                                                                                                                       |

## 5.3 Electives in Engineering and Management

Starting with winter semester 2024/25, there is a separate module handbook for the descriptions of the elective modules, which is part of the semester curriculum for the bachelor's degree program "Engineering and Management". This can be found on the Moodle page of your degree program under "General Information": <https://moodle.thi.de/course/view.php?id=3804&section=2>

### Note:

Please note that *not all modules* listed in the handbook for electives can be selected for your degree program or specialization. The current list of selectable modules for your degree program or specialization can be found in Moodle under: <https://moodle.thi.de/mod/folder/view.php?id=213758>