



Programme and Course Description

Engineering and Management

Master of Engineering (M. Eng.)

Study regulation: WS 21/22

as per: 12-02-2024

Content

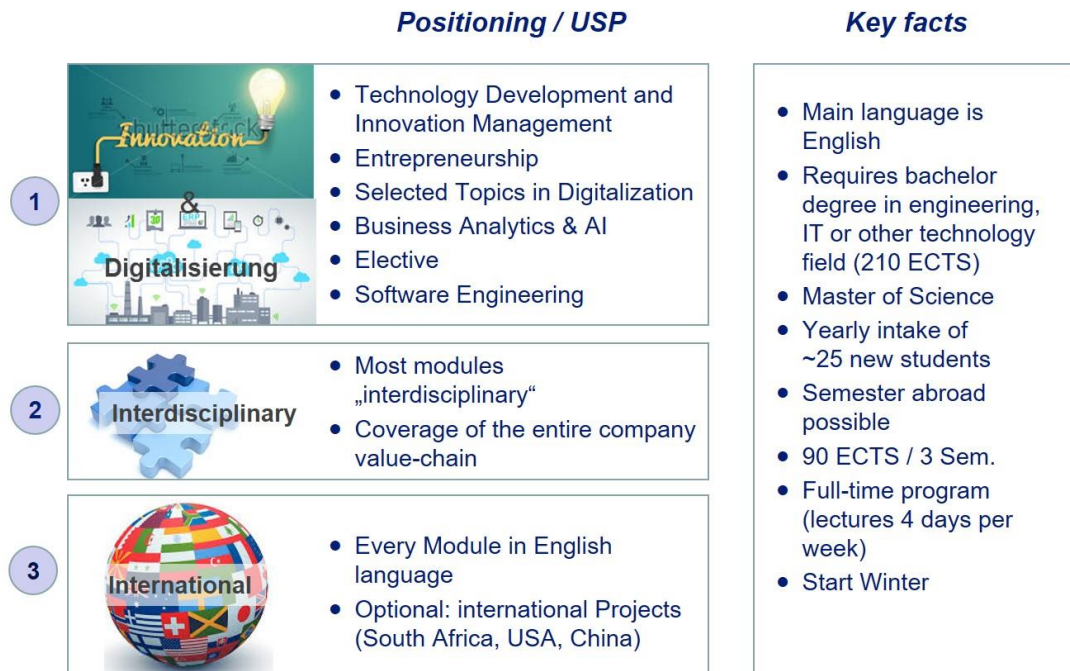
| | |
|--|-----------|
| 1 Overview | 3 |
| 2 Introduction..... | 4 |
| 2.1 Objectives..... | 5 |
| 2.2 Admission requirements..... | 6 |
| 2.3 Target group..... | 7 |
| 2.4 Structure of the programme | 8 |
| 2.5 Prerequisites for advancement..... | 9 |
| 3 Qualification profile | 10 |
| 3.1 Mission statement | 11 |
| 3.2 Study objectives | 13 |
| 3.2.1 Subject-specific competences of the study program..... | 13 |
| 3.2.2 Interdisciplinary competences of the study program..... | 13 |
| 3.2.3 Examination concept of the study programme | 14 |
| 3.2.4 Contribution of individual modules to the objectives of the programme | 15 |
| 3.3 Possible professional fields | 16 |
| 4 Description of Modules | 17 |
| 4.1 Compulsory Modules | 18 |
| Digital Factory..... | 19 |
| Advanced Manufacturing Technologies | 21 |
| International Management | 23 |
| Business Analytics & Artificial Intelligence..... | 25 |
| Advanced Economics..... | 27 |
| Management Accounting & International Taxation..... | 29 |
| Entrepreneurship & Innovation Management..... | 30 |
| Selected Topics in Digitalization | 32 |
| Software Engineering | 34 |
| Digital Marketing | 36 |
| Scientific Research Seminar | 38 |
| Master Thesis | 39 |
| 4.2 Electives | 40 |
| Production and Logistics Network..... | 41 |
| Technology Design and Evaluation..... | 43 |
| Advanced Theories and Methods of Sustainability Management in a Globalized Economy.... | 45 |
| Cost Benchmarking and Data Driven Product Optimization | 47 |
| Design and modelling with CATIA | 49 |
| Internationales Projekt..... | 50 |

1 Overview

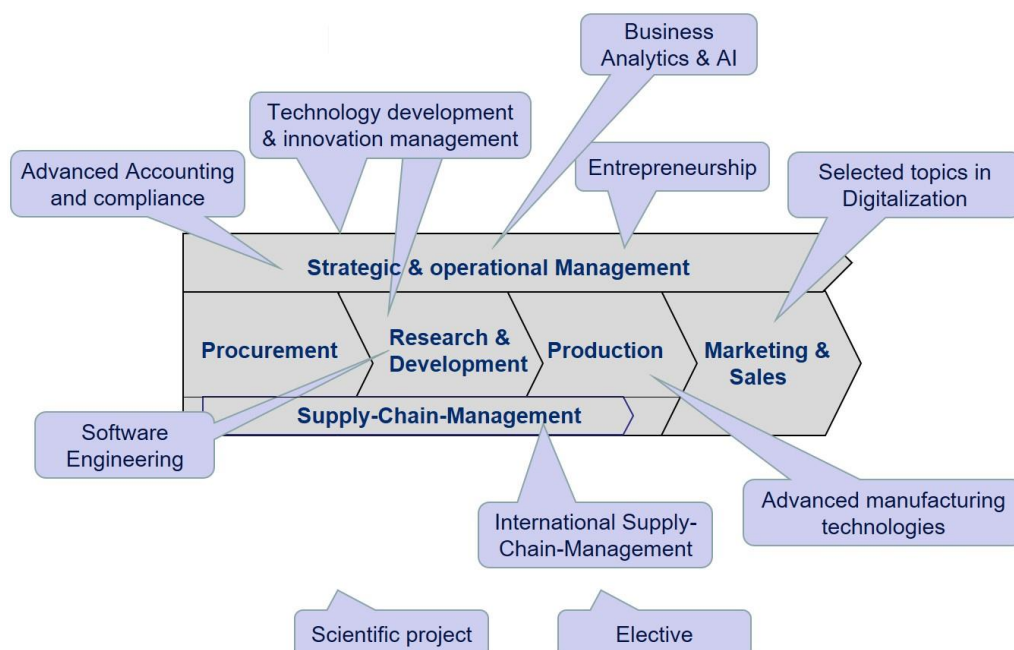
| | |
|---------------------------------|--|
| Name of the programme | Engineering and Management |
| Study type & degree | Consecutive Master of Science (full time) |
| First start date | WS 21/22; Start only in winter semester |
| Standard period of study | 3 semesters (90 ECTS, 48 SWS) |
| Study location | THI-Campus in Ingolstadt |
| Language of instruction | English |
| Cooperation | None |
| Admission requirement | <ul style="list-style-type: none">• Bachelor's degree at a German university with at least 210 ECTS credit points or an equivalent degree of a foreign university• Proof of English proficiency level B2 or higher (approved tests) |
| Capacity | 25 students p.a. |
| Programme director | Prof. Dr. Tobias Albrecht |

2 Introduction

The Master programme “Engineering and Management” of Technische Hochschule Ingolstadt addresses students who intend to work for international companies in functions which require both, an engineering background as well as a thorough understanding of management practices. The programme focusses on three main topics: INNOVATION, INTERDISCIPLINARY, INTERNATIONAL (I³). A short overview shows the following illustration:



The three main Topics of Innovation, Interdisciplinary and International will be taught on the basis of the entire value chain. The following illustration shows the different modules and their influence on the value chain.



2.1 Objectives

Based on their completed Bachelor's programme, graduates acquire and expand their knowledge, skills and competencies in order to understand engineering and management in a digital and international environment. Especially an in-depth knowledge of using new technologies and management methods in a broad variety of industries. Furthermore, they can understand, develop, implement and operate the general management tasks on the value chain. They will be in the position to recognise the interdependency of technical, strategic, managerial and social topics in a digital influenced international business.

2.2 Admission requirements

- General regulations:
 - „Studien- und Prüfungsordnung“ (SPO) für den Masterstudiengang der Fakultät Wirtschaftsingenieurwesen M.Sc. Engineering and Management of Technischen Hochschule Ingolstadt as of 16.11.2020
 - „Rahmenprüfungsordnung“ (RaPO) of Technische Hochschule Ingolstadt
 - „Allgemeine Prüfungsordnung“ (APO) of Technischen Hochschule Ingolstadt
 - „Immatrikulationssatzung“ of Technischen Hochschule Ingolstadt
- Proof of bachelor's degree in engineering sciences, engineering and management, IT, sciences, or a degree in another related discipline at a German university with at least 210 ECTS credit points or an equivalent degree of a foreign university
- All foreign applicants must submit their bachelor's degree to uni-assist, which verifies their eligibility and converts their grades to the German grade system. Uni-Assist will issue a so-called preliminary inspection documentation (VPD) which you must upload to the application portal (like their other documents).
- Proof of English proficiency level B2 or higher.

2.3 Target group

The master's programme is designed for students who:

- are interested in the field of engineering and management with a clear focus of international and digital aspects.
- graduates of bachelor programmes or young professionals with bachelor's degree in engineering sciences, engineering and management, IT, sciences, or a degree in another related discipline
- prospective students that prefer a master's programme fully taught in English, like to gain intercultural experience, and go for an international career at home and abroad.

2.4 Structure of the programme

The programme has the following structure:

Curriculum

1. Semester

| | | |
|----------------------|--------------------------|--|
| Software Engineering | International Management | Business Analytics & Artificial Intelligence |
| Digital Factory | Digital Marketing | Innovationmanagement & Entrepreneurship |

2. Semester

| | | |
|-------------------------------------|--|-----------------------------|
| Selected topics in digitalization | Management Accounting & International Taxation | Scientific Research Seminar |
| Advanced Manufacturing Technologies | Advanced Economics | Elective |

3. Semester

Master's Thesis

2.5 Prerequisites for advancement

To get the title of master's thesis requires that at least 30 ECTS are achieved in the sequence of study (compare "Studien- und Prüfungsordnung" of 16/11/20).

3 Qualification profile

The programme is fully taught in English and welcomes both German and international students. It is designed as an interdisciplinary programme at the interface of technology and business with a strong focus on international and digital aspects.

Four clusters offer a maximum of interdisciplinarity:

- Cluster digitalization
- Cluster technology
- Cluster business
- Cluster integrative

The graduates can apply the mainly used management methods among the supply chain. They can manage innovation processes; apply new technology in both the production and business processes. Assess those changes for the environment and society and can form business models.

The graduates can compile complex tasks within cross-functional and international teams, speak English fluently, work target-oriented and are able to present results.

3.1 Mission statement

The master's programme integrates the mission statement in the following ways:

We prepare our students for the challenges of the future:

- The master's programme creates future competence.
- It creates a spirit of innovation and teaches entrepreneurial thinking.
- It is an interdisciplinary programme, 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 sensitises students to the sustainable use of the environment and resources, to socially responsible behaviour and to social commitment.

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

- The master's programme includes a lot of project work. This enables students to acquire applicable problem-solving skills.
- The lecturers transfer their practical experience and teach academic knowledge. They are professionally competent, are constantly developing in their areas of expertise and contribute their research experience to teaching.
- Students acquire professional, methodical, social and self-competences.

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

- The master's programme is fully taught in English, addresses international students and creates intercultural competences.
- In this way, the programme 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 teach and learn through personal exchange:

- Because this is a Master's programme, small groups and seminar-based forms of teaching are set to enable individual exchange with the students.
- The teaching concept offers digitalized courses (e.g. inverted classroom) in combination with many practical project studies to enhance the learning progress.
- The lecturers try out new ways of innovative and experimental teaching. For example, the first half of the semester concentrates on theoretical basics, the second half on practical application.

We help all students discover and realize their individual potential:

- The master's programme includes a lot of project work. In joint project work, our students gain social skills such as the ability to cooperate and deal with conflict, and leadership skills.
- The master's programme is international and intercultural. Hence, the programme 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.

3.2 Study objectives

3.2.1 Subject-specific competences of the study program

Professional competences:

The graduates:

- can analyze and develop digitalization and how this will impact an existing or a future business with all the aspects among the supply chain.
- are familiar with modern technologies and can develop, evaluate, use and market modern technologies for specific applications.
- can develop forward-looking business models and can use new technologies in different industries.
- can identify the opportunities and risks of operational and social transformation processes and know the success factors.

3.2.2 Interdisciplinary competences of the study program

Methodical competences:

The graduates are able:

- to work scientifically.
- to plan, compile and lead projects.
- to apply new management and development methods in international and digital industries.
- to analyze interdisciplinary problems, to recognize comprehensive correlations, to transfer learned competences to new tasks and to evaluate the technical 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.

Personal 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 results and themselves.

3.2.3 Examination concept of the study programme

| Module | Type of Exam |
|--|--|
| Digital Factory | SA mit Koll (term paper with colloquium) |
| Advanced Manufacturing Technologies | StA (student research project) |
| International Management | mdIP (oral examination) |
| Business Analytics & Artificial Intelligence | schrP (written examination) |
| Advanced Economics | schrP (written examination) |
| Management Accounting & International Taxation | schrP (written examination) |
| Entrepreneurship & Innovation Management | Proj (project thesis) |
| Selected Topics in Digitalization | StA (student research project) |
| Software-Engineering | StA (student research project) |
| Digital Marketing | Proj (project thesis) |
| Elective | SU/Ü + LN |
| Scientific Research Seminar | Proj (project thesis) |
| Master's Thesis | MA (Master's thesis) |

3.2.4 Contribution of individual modules to the objectives of the programme

| Module | Professional competence | Methodology | Social competence | Personal competence |
|--|-------------------------|-------------|-------------------|---------------------|
| Digital Factory | ++ | ++ | | |
| Advanced Manufacturing Technologies | ++ | + | | |
| International Management | ++ | ++ | + | |
| Business Analytics & Artificial Intelligence | ++ | + | | |
| Advanced Economics | ++ | + | | |
| Management Accounting & International Taxation | ++ | + | | |
| Entrepreneurship & Innovation Management | + | + | ++ | + |
| Selected Topics in Digitalization | + | ++ | + | |
| Software-Engineering | ++ | + | | |
| Digital Marketing | + | + | + | |
| Elective | + | ++ | + | ++ |
| Scientific Research Seminar | + | + | + | ++ |
| Master's Thesis | + | + | ++ | + |

3.3 Possible professional fields

Graduates of this programme 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:

- Project Management
- Product and Technology Management
- Creativity and Innovation Management
- Business Development
- Entrepreneurship
- Sustainability

Graduates are also particularly well qualified for these tasks in an international context. Typical industries for the graduates of this program are:

- Mechanical and Electrical Engineering
- IT
- Mobility Industry
- Services
- Consultancy
- Education
- Cities and communities.

4 Description of Modules

4.1 Compulsory Modules

| Digital Factory | | | |
|---|---|---------------------------|---------------------------|
| Module abbreviation: | DigFact_M-EGM | SPO-No.: | 1 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory Module | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | winter and summer term |
| Responsible for module: | Axmann, Bernhard | | |
| Lecturers: | Axmann, Bernhard | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Digital Factory | | |
| Lecture types: | SU/Ü-Lecture with integrated exercises | | |
| Examinations: | LN - StA+Koll. (study work with colloquium), written 8-15 pages or presentation 15-20 pages; oral examination 10-15 minutes | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| Interest in Software and Digital Tool | | | |
| Objectives: | | | |
| Students are able to: | | | |
| <ul style="list-style-type: none"> • develop knowledge to apply methods for scientific work to topics of the digital factory; • generate basic understanding of software applications for factory operation; • evaluate the tasks of the digitalisations of the factory, the resulting challenges and possible approaches to solutions in Industry 4.0; • develop an understanding of data quality and data management; • generate knowledge about the challenges of digitalization. • determine specific problems in digitalization using a systematic approach, evaluate them and identify alternative solutions. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Short recap: Scientific work • Short recap: Basics on Digital Factory / Industry 4.0 • Overview of the basics of AI and its application in industrial operations • Focus: Overview of software applications in industrial operations- predictive Maintenance <ul style="list-style-type: none"> ○ Logistic ○ Purchase ○ Sales ○ Production | | | |

| |
|--|
| <ul style="list-style-type: none"> ○ Engineering ○ Quality ○ Personal ● Basics of data and the importance of data quality ● Challenges in the digitalization of an industrial company using the example of SMEs and corporations <p>Application in Thesis</p> <ul style="list-style-type: none"> ● Evaluation with 5D of software applications in the digital factory ● or practical application of RPA or chatbot and evaluation with cost-benefit and break-even. |
| <p>Literature:</p> <ul style="list-style-type: none"> ● BROY, M., Ch PREHOFER und H ENGESSER, 2016. Digitalisierung und die Rolle der Informatik in Anwendung und Forschung. In: <i>Informatik-Spektrum</i>, S. 436-443. ● MERTENS, P. und D. BARBIAN, 2016. Digitalisierung und Industrie 4.0 – Trend mit modischer Überhöhung? In: <i>Informatik Sprektrum</i>, S. 301-309. ● SCHEER, A.-W., 2016. Nutzentreiber der Digitalisierung - Ein systematischer Ansatz zur Entwicklung disruptiver digitaler Geschäftsmodelle. In: <i>Informatik Spektrum</i>, S. 275-289. ● AXMANN, Bernhard, SCHULDT, Tino, SOLIS, Lesly, 2021. Vergleich von Methoden zur Auswahl Digitaler Technologien für KMU. In: <i>ZWF</i>. S.735-739. ISSN ISSN zwf-2021-0148 ● AXMANN, Bernhard, HARMOKO, Harmoko, JANIESCH, Christian, HARMS, Lukas, 2021. A Framework of Cost Drivers for Robotic Process Automation Projects. In: <i>Lecture Notes in Business Information Processing</i>. In: <i>Springer International Publishing.</i> , S.7-22. ISSN 10.1007/978-3-030-85867-4_2 ● AXMANN, Bernhard, HARMOKO, Harmoko, 2022. Process & Software Selection for Robotic Process Automation (RPA). In: <i>Tehnički glasnik</i>. ISSN 10.31803/tg-20220417182552 |
| <p>Additional remarks:</p> |
| <p>None</p> |

| Advanced Manufacturing Technologies | | | |
|---|--|---------------------------|---------------------------|
| Module abbreviation: | Adv_Man_Tech_M-EGM | SPO-No.: | 2 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory Module | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Bednarz, Martin | | |
| Lecturers: | Bednarz, Martin | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Advanced Manufacturing Technologies | | |
| Lecture types: | SU/Ü-Lecture with integrated exercises | | |
| Examinations: | LN – Study work 8-15 pages without oral presentation | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>Students</p> <ul style="list-style-type: none"> • get to know advanced manufacturing technologies and their industrial applications; • can deduct advantages and disadvantages of different technologies; • are gathering process know-how and understand the physical principles of these technologies; • learn the latest trends in the industry; • practice how to work and communicate in teams; • know how modern manufacturing technologies may affect work processes and society. | | | |
| Content: | | | |
| <p>Advanced Manufacturing Technologies e.g.:</p> <ul style="list-style-type: none"> • Additive Manufacturing; • Laser Technologies; • Technologies for Battery production; • Manufacturing Technologies of fibre reinforced plastics. | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • GROOVER, Mikell P., 2013. <i>Fundamentals of modern manufacturing: materials, processes, and systems</i>. 5. Auflage. Hoboken, NJ: Wiley. ISBN 978-1-118-231463 • BRECHER, Christian, 2015. <i>Advances in production technology</i> [online]. Cham; Heidelberg ; New York ; Dordrecht ; London: Springer Open PDF e-Book. ISBN 978-3-319-12304-2. Verfügbar unter: https://doi.org/10.1007/978-3-319-12304-2. | | | |

- KALPAKJIAN, Serope und Steven R. SCHMID, 2014. *Manufacturing engineering and technology*. 5. Auflage. Singapore [u.a.]: Pearson. ISBN 978-0-13-312874-1, 978-981-06-9406-7

Additional remarks:

No remarks.

| International Management | | | |
|---|--|---------------------------|---------------------------|
| Module abbreviation: | Int_Mgt_M-EGM | SPO-No.: | 3 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Schneider, Yvonne | | |
| Lecturers: | Schneider, Yvonne | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | International Management | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | mdIP – oral examination 15-20 minutes | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>By actively participating in this course, students should be able to:</p> <ul style="list-style-type: none"> • understand key terms and challenges while conducting international business; • analyse how international firms are embedded in the global economy and contribute to international trade and foreign direct investment; • compare options firms have and how they can operate internationally; • determine the complexity of relationships between headquarters and subsidiaries; • differentiate between challenges of the environment that multinational enterprises face, incl. cultural differences, political influence, international trade agreements; • evaluate options for managing organisational structure and culture in an international environment; • explain the multi-dimensional nature of internationalization strategies; • assess how the international dimension of strategy can help to build a company's competitive advantage; • gain ability to critically reflect upon internationalization, its antecedents and consequences. <p>Cases and examples are integrated through the course to reinforce and clarify major topics.</p> | | | |
| Content: | | | |
| <p>This module provides a general overview on principles and challenges of International Management. Among others, the following aspects will be discussed:</p> <ul style="list-style-type: none"> • Introduction into globalization and international business • International business environment: culture, politics, economy • International trade and investment: government influence, cross-national cooperation | | | |

| |
|---|
| <ul style="list-style-type: none">• Internationalization strategies (process, market entry modes, etc.)• Internationalization and corporate social responsibility and business ethics• Specifics of multinational companies, such as<ul style="list-style-type: none">○ Organizational structure of multinational companies○ Leadership and human resource management in multinational companies○ Strategic management of multinational corporations○ Cultural differences and impact as cause for differences |
| Literature: |
| <ul style="list-style-type: none">• DERESKY, Helen und Stewart R. MILLER, 2023. <i>International management: managing across borders and cultures: text and cases</i>. Harlow: Pearson. ISBN 978-1-292-43036-2 |
| Additional remarks: |
| No remarks. |

| Business Analytics & Artificial Intelligence | | | |
|--|--|---------------------------|---------------------------|
| Module abbreviation: | BusAn_AI_M-EGM | SPO-No.: | 4 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 2 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only summer term |
| Responsible for module: | Bock, Jürgen | | |
| Lecturers: | Bock, Jürgen; Radtke, Max | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Business Analytics & Artificial Intelligence | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | schrP90 – written examination, 90 minutes | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| <p>The students are able to:</p> <ul style="list-style-type: none"> • explain the various conflict of objectives of supervised learning; • apply different models of supervised learning; • assess the quality of different models of supervised learning; • apply different clustering methods; • practically implement various machine learning methods using common software libraries; • distinguish between different areas of artificial intelligence and select suitable technologies for specific fields of application; • explain the basic principles and special concepts of formal knowledge representation; • transfer concrete domain knowledge into a formal knowledge model and provide added value through automatic reasoning. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Linear regression • Various classification algorithms • Various clustering techniques • Artificial Neural Networks • Implementation of Machine Learning algorithms using suitable software tools and libraries • Definition of Artificial Intelligence and overview over subdisciplines • Formal knowledge representation and automatic reasoning | | | |

Literature:

- JAMES, Gareth und andere, 2021. *An introduction to statistical learning: with applications in R*. New York, NY: Springer. ISBN 978-1-0716-1417-4, 1-0716-1417-7
- HASTIE, Trevor, Robert TIBSHIRANI und Jerome H. FRIEDMAN, 2017. *The elements of statistical learning: data mining, inference, and prediction*. Second edition, corrected at 12. Auflage. New York, NY: Springer. ISBN 978-0-387-84857-0, 0-387-84857-6

Additional remarks:

No remarks.

| Advanced Economics | | | |
|---|--|---------------------------|---------------------------|
| Module abbreviation: | Adv_Econ_M-EGM | SPO-No.: | 5 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 2 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only summer term |
| Responsible for module: | Eisenberg, Andrea | | |
| Lecturers: | Eisenberg, Andrea | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Advanced Economics | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | schrP90 – written examination, 90 minutes | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>The students get to:</p> <ul style="list-style-type: none"> • understand the importance of global economic system and problems for strategic business decisions in globally active companies; • be able to evaluate challenges resulting from globalization and growing international business transactions; • understand global economic problems, international economic relations and economic policy; • understand how the international monetary system works; • achieve an in-depth understanding of micro- and macroeconomic interrelationships. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Advanced Microeconomic theory: supply and demand, economic actors • Advanced Macroeconomics: inflation, unemployment, economic growth • Institutional economics and international economic organizations • International trade and globalization • Interest rates, international monetary policy and currency systems | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • MANKIW, Nicholas Gregory und Mark P. TAYLOR, 2020. <i>Economics</i>. 5. Auflage. Andover, Hampshire: Cengage. ISBN 9781473768628 • MCDOWELL, Moore, 2012. <i>Principles of economics</i>. 3. Auflage. London [u.a.]: McGraw-Hill Higher Education. ISBN 978-0-07-712169-3, 0-07-712169-4 | | | |

- TAYLOR, Timothy, 2022. *Principles of Economics. PDF* [online]. PDF e-Book.

Additional remarks:

No remarks.

| Management Accounting & International Taxation | | | |
|---|--|---------------------------|---------------------------|
| Module abbreviation: | MgtAcc_IntTax_M-EGM | SPO-No.: | 6 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Albrecht, Tobias | | |
| Lecturers: | Albrecht, Tobias; Eisenberg, Andrea | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Management Accounting & International Taxation | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | schrP90 – written examination, 90 minutes | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>The students get to:</p> <ul style="list-style-type: none"> • understand the importance of international taxation systems for strategic decision-making; • achieve sound understanding of the most important aspects of international company taxation; • understand the core concepts of cost and management accounting; • be able to use advanced management accounting concepts as a base for strategic management in global companies. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Economics of public sector, the tax systems • International taxation: taxation of global groups, Value added tax, withholding tax, transfer pricing • Principles of Cost Accounting • Advanced management accounting systems, • Budgeting and strategic planning as a base for strategic decisions making | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • ATRILL, Peter und Eddie MCLANEY, 2021. <i>Management Accounting for Decision Makers</i>. 10. Auflage. ISBN 978-1292349459 • HERZFELD, Mindy, 2019. <i>International Taxation in a Nutshell</i>. 12. Auflage. ISBN 978-1684673469 | | | |
| Additional remarks: | | | |
| No remarks. | | | |

| Entrepreneurship & Innovation Management | | | |
|--|--|---------------------------|---------------------------|
| Module abbreviation: | ES_Inno_Mgt_M_EGM | SPO-No.: | 7 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 2 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Schwandner, Gerd | | |
| Lecturers: | Albrecht, Tobias | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Entrepreneurship & Innovation Management | | |
| Lecture types: | S-Seminar | | |
| Examinations: | LN – Project work | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| <p>The students get to:</p> <ul style="list-style-type: none"> • understand the challenges and pitfalls of starting-up a company; • comprehend important aspects of innovations; • be able to apply innovation management tools; • know how to implement start-up specific management concepts; • be able to develop convincing business plans; • be able to effectively work as a team; • further improve their presentation skills; • understand the relevance of innovation and entrepreneurship for society. | | | |
| Content: | | | |
| <p>Theory</p> <ul style="list-style-type: none"> • What is entrepreneurship? • Innovation: types, sources, how to find? • Innovation management and -strategy, • Start-ups: strategy agile product development, marketing, financing • Business plans • Other relevant topics: e.g., legal forms, intellectual property right <p>Start-up Project:</p> <ul style="list-style-type: none"> • Creating of a business concept along 3 milestones, incl. pitch-presentations | | | |

| |
|---|
| <ul style="list-style-type: none">• Formulating a business plan as a team• Development of a prototype/mock-up ad a pitch-Videos |
| Literature: |
| <ul style="list-style-type: none">• KAWASAKI, Guy, 2015. <i>The art of the start 2.0: the time-tested, battle-hardened guide for anyone starting anything</i>. London: Portfolio Penguin. ISBN 978-0-241-18726-5• RIES, Eric, 2019. <i>The lean startup: how constant innovation creates radically successful businesses</i>. London: Penguin Business. ISBN 978-0-670-92160-7 |
| Additional remarks: |
| No remarks. |

| Selected Topics in Digitalization | | | |
|--|--|---------------------------|---------------------------|
| Module abbreviation: | SelTop_Digi_M-EGM | SPO-No.: | 8 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Zehbold, Cornelia | | |
| Lecturers: | Zehbold, Cornelia | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Selected Topics in Digitalization | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | LN – Study work 8-15 pages without oral presentation | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| Basics of Business Information Systems | | | |
| Objectives: | | | |
| Students: | | | |
| <ul style="list-style-type: none"> • get to know the drivers of digitalization as well as the typical phases, from digitizing existing processes to new digital business models and ecosystems; • gain insights into the possible effects of digitalization in society; • understand that it is no longer acceptable to just look at processes and data in isolation; • work with current software; • practice digital collaboration in teams; • can analyse problems in the field of digitalization, using a systematic approach, and to present alternative solutions. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Disruptive technologies • Drivers of digitalization • Dimensions of digitalization briefly: business models, processes, products, integration and communication of products with the environment, human-machine interface • Digital business models and value networks • Digital business processes • Process mining and Robotic process automation | | | |

Literature:

- MORABITO, Vincenzo, 2016. *The Future of Digital Business Innovation: Trends and Practices* [online]. Switzerland: Springer PDF e-Book. ISBN 978-3-319-26874-3, 978-3-319-26873-6. Verfügbar unter: <https://doi.org/10.1007/978-3-319-26874-3>.

Additional remarks:

None

| Software Engineering | | | |
|--|--|---------------------------|---------------------------|
| Module abbreviation: | SW_Eng_M-EGM | SPO-No.: | 9 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 2 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only summer term |
| Responsible for module: | Bock, Jürgen | | |
| Lecturers: | Bock, Jürgen; Radtke, Max | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Software Engineering | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | LN – Study work 8-15 pages without oral presentation | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| <p>After participating in this module students are able to:</p> <ul style="list-style-type: none"> • explain the foundations of software engineering; • analyse and structure software requirements; • formally describe software components and interfaces; • develop, test and document simple software components in a high-level programming language; • use development tools (software engineering tool-chain) effectively; • cooperate in and across teams during the development of software applications. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Foundations of software engineering • Systematic analysis of software requirements • Modelling of requirements and components of a software product • Specification and documentation of software component interfaces • Development of software modules in teams including test and documentation • Consistent use of software engineering tools (IDE, sourcecode-, build-, artifact-management) | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • THOMAS, David und Andrew HUNT, 2020. <i>The pragmatic programmer: your journey to mastery</i>. 20. Auflage. Boston: Addison-Wesley. ISBN 978-0-13-595705-9, 0-13-595705-2 • MILES, Russ und Kim HAMILTON, 2006. <i>Learning UML 2.0: [a pragmatic introduction to UML]</i>. 1. Auflage. Sebastopol, CA: O'Reilly & Associates. ISBN 0-596-00982-8 | | | |

- GAMMA, Erich und andere, 1994. *Design Patterns - Elements of Reusable Object-Oriented Software*. ISBN 0-201-63361-2

Additional remarks:

No remarks.

| Digital Marketing | | | |
|--|--|---------------------------|---------------------------|
| Module abbreviation: | Digi_Mkt_M-EGM | SPO-No.: | 10 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 2 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Albrecht, Tobias | | |
| Lecturers: | Bilger, Rebecca | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Digital Marketing | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | LN – Project work | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| The student has the following abilities after finalizing this course: | | | |
| <ul style="list-style-type: none"> • the skill for Search Engine Optimization and Marketing; • how to handle with Big Data and Decision Making; • to know how to use social media management as well as SEO/SEM; • the skill to identify consumer behaviour. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Introduction of Big Data and Data-Analytics • How to use Tools like SEO/SEM • What are intellectual properties? • How to use Web-Analytics • How to build and use a Brand | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • KOTLER, Milton, CAO, Tiger, WANG, Sam, QIAO, Collen, ZHANG, Yuheng, 2020. <i>Marketing strategy in the digital age: applying Kotler's strategies to digital marketing</i> [online]. New Jersey: World Scientific PDF e-Book. ISBN 978-981-121-698-5, 978-981-121-699-2. Verfügbar unter: https://doi.org/10.1142/11737. • KOTLER, Philip, Hermawan KARTAJAYA und Iwan SETIAWAN, 2021. <i>Marketing 5.0: technology for humanity</i>. Hoboken (New Jersey): Wiley. ISBN 978-1-119-66854-1, 978-1-119-66857-2 | | | |

| |
|----------------------------|
| Additional remarks: |
| No remarks. |

| Scientific Research Seminar | | | |
|--|--|---------------------------|---------------------------|
| Module abbreviation: | Sc_Res_Sem_M-EGM | SPO-No.: | 12 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 2 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only summer term |
| Responsible for module: | Albrecht, Tobias | | |
| Lecturers: | Albrecht, Tobias | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Scientific Research Seminar | | |
| Lecture types: | S-Seminar | | |
| Examinations: | LN – Project work | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| <p>The students:</p> <ul style="list-style-type: none"> • can successfully process a complex task within one semester; • are able to work independently into a new, challenging theme; • are able to document and present their project results; • have strong methodological and social competency in areas such as communication, project management and time management. | | | |
| Content: | | | |
| <p>Processing of a semester-accompanying scientific question differ from semester to semester. Several topics are offered, from which one can be selected.</p> <p>The task is a scientific question and is handled by the student on his own responsibility.</p> <p>At the end of the semester, the results are summarized in the form of a report (approx. 10-15 pages) and a presentation (approx. 15-30 minutes).</p> | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • BUI, Yvonne, 2019. <i>How to Write a master's Thesis</i>. 3. Auflage. ISBN 978-1506336091 | | | |
| Additional remarks: | | | |
| No remarks. | | | |

| Master Thesis | | | |
|---|--|---------------------------|---------------------------|
| Module abbreviation: | Ma_Thes | SPO-No.: | 13 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Compulsory module | 3 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | only winter term |
| Responsible for module: | Albrecht, Tobias | | |
| Lecturers: | | | |
| Credit points / SWS: | 30 ECTS / 0 SWS | | |
| Workload: | Contact hours: | 0 h | |
| | Self-study: | 750 h | |
| | Total workload: | 750 h | |
| Subjects of the module: | Master Thesis | | |
| Lecture types: | MA | | |
| Examinations: | Master graduation thesis | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| The students: | | | |
| <ul style="list-style-type: none"> • can carry out autonomously a complex problem around engineering and management at the interface of technology, economy and sociology on a high scientific level. • can apply the acquired skills and scientific methods. • can integrate the results into a professional context and to present them in a scientific paper. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Complex problems in foresight at the interface of technology, economy and sociology with integration of results into a professional context. • Presentation in form of scientific paper. | | | |
| Literature: | | | |
| <ul style="list-style-type: none"> • SUBHASH CHANDRA, Parija und Kate VIKRAM, 2018. <i>Thesis Writing for master's and Ph.D. Program</i>. 1. Auflage. ISBN 978-9811308895 • BUI, Yvonne N., 2019. <i>How to Write a master's Thesis</i>. 3. Auflage. ISBN 978-1506336091 | | | |
| Additional remarks: | | | |
| No remarks. | | | |

4.2 Electives

| Production and Logistics Network | | | |
|---|--|---------------------------|---------------------------|
| Module abbreviation: | ProdLogis_M-EGM | SPO-No.: | 11 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Elective module | |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | winter/summer term |
| Responsible for module: | Jattke, Andreas | | |
| Lecturers: | Jattke, Andreas | | |
| Credit points / SWS: | 5 ECTS / 5 SWS | | |
| Workload: | Contact hours: | | 58 h |
| | Self-study: | | 67 h |
| | Total workload: | | 125 h |
| Subjects of the module: | Production and Logistics Networks | | |
| Lecture types: | SU/Ü-Lecture with integrated exercises | | |
| Examinations: | Oral examination 15-20 minutes | | |
| Usability for other study programs: | Please see the subject recognition list of SCS (Study Service Centre). | | |
| Prerequisites according examination regulation: | | | |
| none | | | |
| Recommended prerequisites: | | | |
| none | | | |
| Objectives: | | | |
| <p>The students</p> <ul style="list-style-type: none"> • get to know the significance, elements, basic structure, design and execution of production and logistic networks in the automotive industry. • can capture and assess interactions between production network, location factors, suppliers, logistics network, own/external skills, own manufacturing penetration, product design/technologies, production design/technologies etc. • get to know possible production strategies, their effects on the production and logistics network including suppliers' environment and can systematically assess and develop different production strategies. • can design skills strategies in conjunction with the production strategy and hence derive and establish skills development including supplier development. • get to know procurement, intra/production and distribution logistics systems used in the automotive industry (e.g., JIT, milk run, supermarket, kanban concept, single/multi-level, combined logistics systems etc.). • can assess and fundamentally calculate the effects of different logistics concepts. • can optimize supply chains (specific design, KPI, transport- and warehousing strategies, make or buy decisions, etc.) | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Production networks and skills strategies • Logistics systems and networks • Logistics concepts in manufacture (intralogistics) | | | |

- Supply Chain management design methodologies
- Supply Chain KPIs
- TOPSIM LOGISITCS simulation tool
- Supply chain management in line with industry 4.0 (digitalisation)

Literature:

- ERRASTI, Ander, 2013. *Global production networks: operations design and management*. 2. Auflage. Boca Raton, FL: CRC Press. ISBN 978-1-4665-6294-3, 1-4665-6294-3
- ZHENG, Li und Frank POSSEL-DÖLKEN, 2002. *Strategic production networks: with 17 tables*. Berlin [u.a.]: Springer. ISBN 3-540-43162-4, 978-3-642-07734-0
- ABELE, Eberhard, Ulrich NÄHER und Gernot STRUBE, 2007. *Global production: a handbook for strategy and implementation*. 1. Auflage. Berlin: Springer Berlin. ISBN 978-3-540-71652-5, 3-540-71652-1
- STADTLER, Hartmut, 2015. *Supply chain management and advanced planning: concepts, models, software, and case studies*. 5. Auflage. Berlin [u.a.]: Springer. ISBN 978-3-642-55308-0, 3-642-55308-7

Additional remarks:

Bonus system:

In 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.

| Technology Design and Evaluation | | | |
|--|---|---------------------------|---------------------------|
| Module abbreviation: | TechDesEva_M-EGM | SPO-No.: | 11 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Elective module | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | winter and summer term |
| Responsible for module: | Schönmann, Alexander | | |
| Lecturers: | Schönmann, Alexander; Schropp, Theresa | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Technology Design and Evaluation | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | schrP90 - written exam, 90 minutes | | |
| Usability for other study programs: | Please see subject recognition list of SCS (student service centre) | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>After attending the course, the students will have the following knowledge:</p> <ul style="list-style-type: none"> • know and apply important methods of technology management and can explain them; • can propose appropriate technology development process models based on use case and company size; • evaluate technological solutions in a team and represent advantages and disadvantages for this; • design the implementation of workshops for eliciting requirements for development process models; • know the tasks of technology development and know how to manage R&D processes. | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Modern technologies and technology trends • Organisation and role of Technology Management • Technology Dynamics (Lifecycle models) • Technology Intelligence (Technology scanning, Technology monitoring, Technology scouting, Technology identification, search field description) • Technology information sources (formal, informal sources) • Technology evaluation (maturity, potential, economic efficiency, Technology portfolio analysis) • Technology planning (Roadmaps) • R&D Management • Technology development (Technology Stage Gate) • Application-specific selection of adequate technologies | | | |

- Linking Technology development and Product development processes
- New Product development: Development strategies and degree of newness; “Valley of death”
- Product Development processes: e.g., V-Model, Spiral model, Lean Start-up, Trends in process design
- Quality Function Deployment
- Product Architecture: functional and physical elements (differential design vs. integral design), Types of modularity
- Role of design in the development process (e.g., DFX)
- Digital Technologies #svhs#amp## Digital Ecosystems
- Biomimetics (learning from nature)
- Technology exploitation strategies
- Technology protection
- Case studies and Industry examples on latest trends and technologies

Literature:

- TROTT, Paul, 2021. *Innovation management and new product development*. Harlow, England: Pearson. ISBN 978-1-292-25152-3
- SCHUH, Günther und Sascha KLAPPERT, 2011. *Technologiemanagement - Handbuch Produktion und Management*.
- KARAOMERLIOGLU, Dilek Cetindamar, Robert PHAAL und David PROBERT, 2016. *Technology management: activities and tools*. New York, NY: Palgrave Macmillan. ISBN 978-1-137-43185-1
- SAVIOZ, Pascal, 2004. *Technology Intelligence - Concept Design and Implementation in Technology-based SMEs*.
- ULRICH, Karl T. und Steven D. EPPINGER, 2015. *Product Design and Development*.
- MARITAN, Davide, 2015. *Practical Manual of Quality Function Deployment* [online]. Cham [u.a.]: Springer International Publishing PDF e-Book. ISBN 978-3-319-08521-0, 978-3-319-08520-3. Verfügbar unter: <https://doi.org/10.1007/978-3-319-08521-0>.
- EVERS, Natasha, James S. CUNNINGHAM und Thomas HOHOLM, 2021. *Technology entrepreneurship: bringing innovation to the marketplace*. London: Red Globe Press. ISBN 978-1-352-01117-3

Additional remarks:

A voluntary bonus system is offered:

In the course, topics on methods of technology management are offered for individual processing and presentation, which lead to bonus points for the examination performance for each qualitatively processed task. The creditability as well as maximum crediting of bonus points takes place according to the APO.

Lectures contain digital learning elements for self-study, such as learning videos or meetings via web conferences.

The examination can be held in digital form on a PC at the university campus.

| Advanced Theories and Methods of Sustainability Management in a Globalized Economy | | | |
|---|---|---------------------------|---------------------------|
| Module abbreviation: | WMod_ATMSM_M-EGM | SPO-No.: | 11 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Individual Elective | |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | winter/summer term |
| Responsible for module: | Schneider, Yvonne | | |
| Lecturers: | Schneider, Yvonne | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 79 h | |
| | Total workload: | 126 h | |
| Subjects of the module: | Advanced Theories and Methods of Sustainability Management in a Globalized Economy (WMod_ATMSM_M-EGM) | | |
| Lecture types: | SU/Ü – Lecture with integrated exercises (WMod_ATMSM_M-EGM) | | |
| Examinations: | LN – oral examination, 15 minutes | | |
| Usability for other study programs: | None | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>By actively participating in this course, students</p> <ul style="list-style-type: none"> • will get an understanding of sustainability management and its opportunities to achieve a competitive advantage in business; • will analyze companies upon the basis of measurement tools and KPIs for actions in the field of sustainability; • will be familiar with the theoretical basis of sustainability through applied examples and concepts. <p>Major theories, cases, examples, and calculation exercises are integrated through the course to reinforce and to clarify major topics.</p> | | | |
| Content: | | | |
| <p>This module provides a deeper understanding of theory, methods, and challenges of sustainability. Among others, the following aspects will be discussed:</p> <ul style="list-style-type: none"> • Advanced theories and methods of sustainability and in particular sustainability strategies for international companies. • Influence of a globalized economy on sustainability and vice versa. • Sustainability in business and the TBL influence on companies' organizations and strategies. • Applied stakeholder management perspectives. | | | |

Literature:

- JONKER, Jan, FABER, Niels, 2021. *Organizing for sustainability: a guide to developing new business models* [online]. Cham, Switzerland: Palgrave Macmillan PDF E-Book. ISBN 978-3-030-78157-6. Verfügbar unter: <https://doi.org/10.1007/978-3-030-78157-6>.
- HAHN, Rüdiger, 2022. *Sustainability management: global perspectives on concepts, instruments, and stakeholders*. Fellbach: Rüdiger Hahn. ISBN 978-3-9823211-0-3, 3-9823211-0-7
- RITZ, Aixa A., RIMANOCZY, Isabel, 2021. *Sustainability mindset and transformative leadership: a multi-disciplinary perspective* [online]. Cham, Switzerland: Palgrave Macmillan PDF E-Book. ISBN 978-3-030-76069-4. Verfügbar unter: <https://doi.org/10.1007/978-3-030-76069-4>.

Additional remarks:

No remarks.

| Cost Benchmarking and Data Driven Product Optimization | | | |
|---|---|---------------------------|---------------------------|
| Module abbreviation: | WMod_CoBench_M-EGM | SPO-No.: | 11 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Individual Elective | |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | winter/summer term |
| Responsible for module: | Hecht, Dirk | | |
| Lecturers: | Hartmann, Matthias; Hecht, Dirk | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 79 h | |
| | Total workload: | 126 h | |
| Subjects of the module: | Cost Benchmarking and Data Driven Product Optimization (WMod_CoBench_M-EGM) | | |
| Lecture types: | SU/Ü - seminaristischer Unterricht/Übung (WMod_CoBench_M-EGM) | | |
| Examinations: | LN – oral exam, 15 minutes | | |
| Usability for other study programs: | None | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| <p>The students</p> <ul style="list-style-type: none"> understand the principles of cost analysis and implement them using the example of a drive unit practice the physical structure of a cost structure, bill of materials and photo documentation in the laboratory become familiar with common scientific approaches to successful benchmarking can implement learned theories for product optimization and deepen them in practical exercises understand the approaches of AI for parametric cost evaluation | | | |
| Content: | | | |
| <ul style="list-style-type: none"> Cost Analysis of ID 3 Drive Unit Work at Lab Develop Cost Structure of various technologies Benchmarking with other concepts Parametric Costing incl. AI Scenario analytic Software Costing Creative Thinking / Idea Generation – Tools & Methods (incl. AI) | | | |

Literature:

- GROOVER, Mikell P., 2021. *Fundamentals of modern manufacturing: materials, processes, and systems*. Singapore: Wiley. ISBN 978-1-119-70642-7
- JAMES, Gareth und andere, 2021. *An introduction to statistical learning: with applications in R*. 5. Auflage. New York, NY, USA: Springer. ISBN 978-1-0716-1417-4, 978-1-0716-1420-4
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Additional remarks:

No remarks.

| Design and modelling with CATIA | | | |
|--|---|---------------------------|---------------------------|
| Module abbreviation: | WMod_DesModellCatia_M-EGM | SPO-No.: | 11 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Individual Elective | 1 |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | English | 1 semester | winter and summer term |
| Responsible for module: | Basta, Georg | | |
| Lecturers: | Basta, Georg | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Contact hours: | 47 h | |
| | Self-study: | 78 h | |
| | Total workload: | 125 h | |
| Subjects of the module: | Design and modelling with CATIA (WMod_DesModellCatia_M-EGM) | | |
| Lecture types: | SU/Ü-Seminar with integrated exercises | | |
| Examinations: | LN - Project paper (WMod_DesModellCatia_M-EGM) | | |
| Usability for other study programs: | None | | |
| Prerequisites according examination regulation: | | | |
| None | | | |
| Recommended prerequisites: | | | |
| None | | | |
| Objectives: | | | |
| Students are able to | | | |
| <ul style="list-style-type: none"> • develop components in Part-Design and Generative Shape Design • create single part drawings and assembly drawings • organize themselves with several people in the design process | | | |
| Content: | | | |
| <ul style="list-style-type: none"> • Working on a constructive student research project in a team • Learn working with CATIA and practice by modelling components • Part design • Assembly design • Drawings from single parts and assemblies | | | |
| Literature: | | | |
| Will be specified at the beginning of the course. | | | |
| Additional remarks: | | | |
| No remarks. | | | |

| Internationales Projekt | | | |
|---|--|---------------------------|---|
| Module abbreviation: | InternProj_M-EGM | SPO-No.: | 11 |
| Curriculum: | Programme | Module type | Semester |
| | Engineering and Management (SPO WS 21/22) | Individual Elective | |
| Module attributes: | Language of instruction | Duration of module | Frequency of offer |
| | Deutsch/English | 1 Semester / 1 semester | Winter- und Sommersemester / winter and summer term |
| Responsible for module: | Hecht, Dirk | | |
| Lecturers: | Hecht, Dirk; Schwandner, Gerd | | |
| Credit points / SWS: | 5 ECTS / 4 SWS | | |
| Workload: | Kontaktstunden/Contact hours: | 47 h | |
| | Selbststudium/Self-study: | 78 h | |
| | Gesamtaufwand/Total workload: | 125 h | |
| Subjects of the module: | Internationales Projekt (InternProj_M-EGM) | | |
| Lecture types: | SU/Ü-Seminaristischer Unterricht/Übung Lecture with integrated exercises | | |
| Examinations: | Project work with oral presentation (15 minutes) and written paper (5 - 25 pages) (InternProj_M-EGM) | | |
| Usability for other study programs: | Keine/None | | |
| Prerequisites according examination regulation: | | | |
| Keine/None | | | |
| Recommended prerequisites: | | | |
| Keine/None | | | |
| Objectives: | | | |
| Die Studierenden können selbstständig ein abgegrenztes Thema aus dem internationalen Kontext nach wissenschaftlichen Anforderungen bearbeiten und Lösungsvorschläge präsentieren. | | | |
| Content: | | | |
| Die Inhalte werden jeweils an das entsprechende Land adaptiert und mit aktuellen Aspekten der Internationalität bzw. Globalisierung abgerundet. | | | |
| Literature: | | | |
| Wird zu Beginn bekannt gegeben. | | | |
| Additional remarks: | | | |
| Keine Anmerkungen. / No remarks. | | | |