Appendix 2: Module Catalogue

Bachelor's study programme in Business Administration and Engineering (work-integrated)

Please note: The German version of this document is the legally binding version. The English translation provided here is for information purposes only.

Introduction to Industrial Engineering and Management								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
1.1	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students have a well-founded orientation for the individual configuration of their studies and their professional practice, in particular also for their company projects and bachelor theses.

They are able to

- explain the vocational field of 'Business Management and Engineering' and its typical scope of functions as well as their interaction in a scientifically systematic way.
- formulate economic-technical questions and approaches to solutions based on this.
- conduct targeted research for more in-depth content.
- derive success factors and development potentialities for their studying and practice.

3 Contents

Lecture/Exercise

- Course of studies and vocational profile in 'Business Management and Engineering'
- Main industries and scope of functions of industrial engineers and their economic-technical interdependencies
- Success factors and development potentialities for studies and career

4 Participation requirements

None

5 Form of assessment

Written examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Christoph von Uthmann

9 Other information

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Mathematics 1								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
1.2	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	32 h			40	

2 Learning outcomes/competences

The participants acquire the ability to analyse real-valued functions with confidence in order to determine arbitrary properties of interest: They obtain familiarity with common function types and the mathematical notation and have mastered calculations utilising real and complex numbers. They are able to determine the inverse function (or an appropriate local branch) and can routinely analyse rational functions in order to correctly sketch the function graph qualitatively. They are familiar with limit values of sequences and function values, utilised, for example, to determine asymptotic behaviour of functions. They are able to correctly derive real functions and can systematically utilise this knowledge to perform function analysis and curve sketching. Finally, they master differential calculus for multivariable functions and can determine the position, value and type and their extrema with certainty.

3 Contents

Basics

- Number ranges, terminology, symbols, knowledge of basic functions
- Arithmetic of complex numbers

Analysis I

- Sequences and limits
- Real functions of one variable
  - Reverse functions
  - Analysis of rational functions
  - Differential calculus of functions of one variable
- Real functions with multiple variables
- Multi-variable differential calculus and determination of local extrema

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr.-Ing. Tilman Hetsch

9 Other information

Participation in the preceding preparatory course and the tutorials is strongly recommended.

Physics								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
1.3	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	24 h			40	

2	**Learning outcomes/competences** Students can confidently deal with physical quantities and units. They understand the basic concepts, ideas and mathematical methods of classical physics. They can set up and solve equations of motion for mechanical systems. They understand the creation of images through geometric optics. The students know the elementary basics of thermodynamics. They can recognise problem interrelationships as a prerequisite for solving technical problems. Students possess skills in simple experimentation as well as in the presentation and evaluation of measurement results. They are able to prepare protocols for laboratory experiments.
3	**Contents** • Introduction to the basics of physics: The international system of units; conversion of units; scalars and vectors; measurement of physical quantities; measurement uncertainty and evaluation of measurement data • Mechanics of mass points and rigid bodies: Basic concepts of linear motion; dynamics: Mass, momentum and force; work, energy and power; rotary motion • Geometrical optics: Light propagation; reflection and refraction; optical instruments • Heat theory: Thermal state variables and equations of state; caloric variables; thermodynamic laws, cyclic processes In the supervised self-study, the lecture content is deepened through the application of physical principles using exercise examples. This knowledge is rounded off by selected physical experiments in the form of a practical course. In the process, the experiments are carried out and evaluated independently and in small groups.
4	**Participation requirements** None
5	**Form of assessment** Written examination
6	**Condition for the award of credit points** Passed module examination and issued attendance certificate for the practical course
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** Prof. Dr.-Ing. Frank Hamelmann
9	**Other information** -

Fundamentals in Design Engineering								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
1.4	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with self-study materials	40	German
	Exercise	2 SCH			40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students are able to read technical drawings – the "language" of engineering – in order to be able to participate in the team discussion about the designs at hand from a technical and economic point of view. An essential aspect of this is the development of their spatial imagination. The basic knowledge for the module "Introduction to 3D Design" is also taught here.
Furthermore, the students can gain an overview of the rules and regulations of constructive work in order to be able to understand the process of a construction. For the selection of appropriate machine elements in designs (the essential basic elements are dealt with here), knowledge of the procedure for strength-related design is required. A link is also established with the module "Technical Mechanics".

3 Contents

- Introduction
  General principles of design - Basics of standards - Tolerances - Fits - Technical surfaces
- Technical drawing
  Types of drawings - Sketches - Structure of technical drawings (TZ) - Representation of components - Tolerance specifications in drawings - Drawing specifications for technical surfaces - Procedure for making technical drawings
- Introduction to Descriptive Geometry
  Figure - Projection - Basic geometric solids and body sections
- Introduction to strength of materials theory
  External forces and internal stresses - Basic types of stress - Time course of stress - Strength parameters for material behaviour - Influences on component strength - Practical strength calculation
- Selected machine elements
  Connecting elements - Elastic springs - Bearing and transmission elements

Exercise: Tasks for creating and reading TCs, for designing tolerances and fits as well as for strength-compliant design of simple components.

4 Participation requirements

None

5 Form of assessment

Written examination

6 Condition for the award of credit points

Module examination pass

7	**Application of the module (in the following study programmes)**
	WIM
8	**Module coordinator**
	Prof. Dr.-Ing. Andreas Tenzler
9	**Other information**
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Business Administration 1 – Fundamentals of Business Organisation								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
1.5	150 h	5	1st sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Lecture	3 SCH	126 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The participants understand the general economic principles of business administration and can apply them to business practice.
They can explain individual functional areas and recognise and assess overall interdependencies between operational and economic functional areas.
Students are thus able to understand the company as a system of elementary and dispositive factors and thinking in economic terms.

3 Contents

- History of business administration
- Business administration as a scientific discipline
- Introduction to economic thinking
- Significance of the company in the social market economy of the FRG
- Company objectives
- Corporate management/organisation
- Planning, management and control systems
- Legal forms of companies/combinations of companies

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Michael Mohe

9 Other information

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Methods of Scientific Work – Project Management								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
2.1	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students have knowledge and skills in scientific work and project management that are appropriate for university education.

They are able to

- apply them confidently when working out economic-technical questions and problems, and in particular to scientific projects within the course of studies (company projects, bachelor theses, term papers/seminar papers, ...).
- identify their roles and tasks in projects, position themselves adequately and effectively as an individual member as well as in a leading function in studies and work-related projects, and to contribute efficiently.
- do in-depth research in specialist literature.

3 Contents

Lecture/Workshop/Exercise

- Basics and interrelationships of ‘scientific work’ and ‘project management’
- Scientific and management-oriented structuring, argumentation and writing
- Initiation, planning and execution of projects in studies and profession

4 Participation requirements

None

5 Form of assessment

Written examination or combination exam

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Christoph von Uthmann

9 Other information

Mathematics 2								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
2.2	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	32 h			40	

2 Learning outcomes/competences

The participants are familiar with the manipulation of matrices and can solve arbitrary linear systems of equations with the help of the Gaussian algorithm, non-quadratic systems included. They understand the underlying theory about the number of solutions in over-, under- and uniquely determined systems and can evaluate determinants up to Sarrus' rule. Finally, they can determine inverse matrices and use them to solve matrix equations. Furthermore, they are able to model linear optimisation problems from practice-relevant settings and solve them graphically or computationally by means of the simplex algorithm. They are familiar with the concept of sensitivity analysis. The students master integration calculus of real functions up to "integration based on partial fraction decomposition" and can apply it to problems from technology and economics. Within the framework of financial mathematics, they can solve problems involving interest and compound interest, as well as annuity calculations with confidence.

3 Contents

Linear algebra

- Vector and matrix calculus
- Practical application: material requirements calculation & GOZINTO-graphs
- Linear systems of equations and inverse matrices

Linear optimisation

- Modelling
- Graphical and computational solution with sensitivity analysis based on it

Analysis

- Integral calculus of real functions

Financial mathematics

- Interest calculation
- Annuity calculation and applications such as investment appraisal

4 Participation requirements

Formal: None

Content: Good working knowledge from the module "Mathematics 1" for industrial engineers

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8	**Module coordinator** Prof. Dr.-Ing. Tilman Hetsch
9	**Other information** Participation in the accompanying tutorials is strongly recommended

Electrical Engineering and Electronics

No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q-level
2.3	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA

1	Course type	Contact time	Self-study	Forms of teaching (learning methods)	Planned group size	Language
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	24 h			40	

2 Learning outcomes/competences

Students are familiar with the basic methods of electrical DC and AC technology engineering. They know the fundamentals of complex-valued AC circuit analysis, together with its terminology and can apply it to practical problems. They know electronic circuits with operational amplifiers as used in measurement and control technology. Students are familiar with the basic concepts of electrical power engineering.

3 Contents

Lecture/Exercise

- DC circuits:
  - Basic terms, sources, loads, power, reference arrow systems, basic circuits
  - Induction effects and time-dependent behaviour of capacitors and inductors, flyback diodes
- AC circuits: Basic terms, capacitances, inductances and transformers, pointer, power in AC circuits, complex-valued AC calculation, basic circuits, low and high pass filters, oscillators
- Outlook on electronics: Basic elements, operational amplifiers; outlook digital technology
- Fundamental concepts of electrical power technology: Frequency spectrum, harmonics, three-phase systems

Practical

- Use of measuring instruments in the laboratory
- Examination of linear circuits
- Time-dependent behaviour of capacitances and inductances

4 Participation requirements

None

5 Form of assessment

Written examination

6 Condition for the award of credit points

Passed module examination and issued test for the practical course

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr.-Ing. A. Philipp Boysen

9 Other information

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Engineering Mechanics								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
2.4	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Lecture	2 SCH	110 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students have an overview of the essential basics of engineering mechanics, they understand the effect of forces and can assess the effects of forces as a basis for engineering thinking and technical understanding. The focus is on a broad presentation of the technical interrelationships. Through this course, students have a basic understanding of further modules from the elective programme compulsory field of technology – focus on mechanical engineering.

3 Contents

1. Basic concepts of mechanics:
   Force – Balance – the Rigid Body
2. Statics:
   Introduction – Plane system of forces – Centre of gravity – Static equilibrium of bodies – Freeing – Determination of support and intermediate reactions – Friction
3. Strength of materials:
   Introduction to strength theory – internal forces – tensile loading or pressure – shear – stress on bending – torsional stress – stress on buckling – composite stress

In the supervised self-study, the contents of the lecture are deepened by applying mechanical principles on the basis of exercise examples. This knowledge is rounded off by selected experiments in the form of a practical course. Experiments are executed and evaluated independently in small groups.

4 Participation requirements

None

5 Form of assessment

Written or performance exam

6 Condition for the award of credit points

Passed module examination and issued attendance certificate for the practical course

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Frank U. Hamelmann

9 Other information

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External Accounting and Financing								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
2.5	150 h	5	2nd sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with self-study materials	40	German
	Exercise	2 SCH			40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students understand the structure and content of external accounting. They understand the system of double-entry bookkeeping, can present business transactions in accounting records, map the accounting records in accounts and develop the balance sheet and profit and loss account from the accounts. They have learned the basics of financial statements and financial statement analysis. They have a basic understanding of financial issues and understand the relationship between the use of capital and the raising of capital, including its impact on the balance sheet. They have learned about the instruments and structuring of capital raising. In addition, they can determine the capital required to ensure liquidity and understand the basics of rating.

Overall, the students develop an understanding of the information possibilities of external accounting and understand how business transactions are reflected in the balance sheet and income statement.

3 Contents

- Introduction to managerial accounting
- The double-entry bookkeeping system
- Year-end closing entries
- Fundamentals of accounting policy
- Fundamentals of financial statement analysis
- Fundamentals of operational financing decisions
- Determination of capital and liquidity requirements
- Short- and long-term debt financing
- Leasing and factoring
- Self-financing from profits
- Financing from depreciation
- Project financing
- Basel II and Rating

4 Participation requirements

None

5 Form of assessment

Written examination

6 Condition for the award of credit points

Module examination pass

7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** Prof. Dr. Michael Mohe
9	**Other information** -

Statistics								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
3.1	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students master fundamental methods of descriptive and inductive statistics and the corresponding mathematical calculus. They can select suitable forms of visualisation for a given statistic and evaluate existing raw data with confidence. They are also able to apply the methods they have learned to problems in business administration (e.g. market survey, survey design) and engineering (e.g. measurement and control) stochastic in practice.

3 Contents

- Sample survey, statistical attributes and domains
- One-dimensional frequency distributions
- Statistical location parameter and measures of variations
- Correlation analysis and scatter plots for two-dimensional frequency distributions
- Regression analysis with focus on linear regression
- Combinatorics
- Probability theory with a focus on Laplace probabilities
- Introduction to random variables
- Introduction to distributions with a focus on normal distribution

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr.-Ing. Tilman Hetsch

9 Other information

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Measurement Technology and Sensors								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
3.2	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	24 h			40	

2 Learning outcomes/competences

The students have acquired basic knowledge of measurement technology: They understand the physical processes that lead to the measurements as well as quantities and units of the measured values of the respective process. They have an insight of the sensor principles and measuring chains relevant in process and automation technology. They can classify the sensors on the basis of numerous product examples and assess and plan their use. Students can confidently apply the most important methods of error and compensation calculation. They know different methods of analogue/digital conversion.

3 Contents

Lecture/Exercise

- Basics of sensors and measuring systems
- General requirements for sensors and measuring systems
- Error and compensation calculation
- Measurement statistics and error propagation
- Measurement and evaluation of electrical quantities
- Measurement and evaluation of geometric quantities and motion sequences
- Measurement / evaluation of non-electrical physical variables (e.g. temperature)
- Trends in measurement technology (IOT applications)

Practical

- Temperature measurement and statistical evaluation
- Force measurement with bending beam and strain gauges
- Electrical power measurement (current/voltage correct)

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Passed module examination and issued attestation for the practical course

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr.-Ing. Volker Becker

9 Other information

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Management Accounting incl. Investment								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
3.3	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students have a fundamental knowledge of cost and investment accounting as a basis and instrument of controlling.

They are able to

- apply them adequately in their studies and in practice.
- prepare and interpret results in a management-oriented manner.
- conduct targeted research for more in-depth content.

3 Contents

Lecture/Exercise

- Delimitation, basic terms and subsystems of management accounting
- Static and dynamic investment accounting under certainty and uncertainty
- Cost accounting
- Controlling – prospect on studies and career

4 Participation requirements

None

5 Form of assessment

Written examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Christoph von Uthmann

9 Other information

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Business Administration 2 – Fundamentals of Marketing								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
3.4	150 h	5	3rd sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	3 SCH	126 h	Seminar lessons with self-study materials	40	German
	Exercise	1 SCH			40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students have an overview of the basic contents of marketing. They can think in a customer-oriented way and take this into account in the most important company tasks (marketing as a way of thinking). They are able to classify the basic objectives and strategies of marketing and both plan the instruments of the marketing mix both strategically and implement them tactically.

3 Contents

- Historical Development
- Needs & Requirements
- Marketing Plan
- Marketing Objectives
- Marketing Strategies
- Market research/analysis of marketing opportunities
- Marketing tools

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM, MBM

8 Module coordinator

Prof. Dr. Michael Mohe

9 Other information

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Elective Module Engineering: Energy Efficiency								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
3.5	150 h	5	3rd/5th/7th sem.	Annual	Winter	1 sem.	Compulsory elective	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	110 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students know the range of conventional and renewable energy sources and are familiar with the process of converting, transporting and storing energy. They know the procedures for preparing CO_2 balances. Students will be able to analyse a given energy consumption situation and optimise and compare it with regard to given goals, taking into account the technical possibilities of renewable energies, energy storage and increasing the efficiency of energy use. Students have the methodological competence to simulate systems for the provision of electrical and thermal energy, to evaluate them computationally and to compare them with regard to given ecological and economic goals. Students are able to obtain information on the state of the art and the state of research and development of technologies for energy conversion, energy storage and energy use avoidance.

3 Contents

- Energy sources, conversion and transport of energy
- Renewable energies
- CO_2 balances, climate protection
- Energy balance of buildings
- Thermal energy and air conditioning, thermal insulation
- Electrical energy supply and energy monitoring

4 Participation requirements

None

5 Form of assessment

Written exam or term paper or project work

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Frank U. Hamelmann

9 Other information

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Project in Industry 1								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
4.1	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Work-related project	According to need	150 h	Work-related module	Individual work / faculty tutoring	German, English by agreement

2	**Learning outcomes/competences** The students are able to mirror theoretical references of industrial engineering and management on application fields in practice. They can recognise and analyse typical engineering and/or business management problems and independently develop solution options. In the work-related modules, the students acquire the ability to connect and reflect on the "world of practice" and the “world of science”.
3	**Contents** The topics to be worked on are related to engineering and/or business administration and are based on the module contents of the curriculum. The topic is decided individually between the student and the faculty tutors is coordinated with their faculty tutors in the company and at the university.
4	**Participation requirements** Formal: None Content: Knowledge from the module “Methods of Scientific Work – Project Management”
5	**Form of assessment** Term paper
6	**Condition for the award of credit points** Module examination pass
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** All teaching staff
9	**Other information** -

Computer Science								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
4.2	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self- study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	24 h			40	

2 Learning outcomes/competences

The students know the basic principle of computers and can apply simple forms of programming. They know the representation of the fundamental data types of programming languages. They can programme simple tasks in a script language and thus automate work steps on the computer. They also know the basic concept of a database and are able to create simple data operations and queries.

3 Contents

Lesson/Exercise

- Computer basics
  - Computer architecture
  - Number systems: Decimal, dual and hexadecimal system, and conversion
  - Logical operations
  - Fundamental data types: Integers, characters, strings, floating point numbers
- Basics of programming languages
  - Basic elements – variables, branches, loops, subroutines
  - Compiled and scripting languages
- Algorithms and data structures
  - Algorithms, recursion
  - Flow charts
  - Lists, queues, searches, simple sorting
- Databases
  - Basics, structure
  - Operations
  - Queries

Practical/Project Work

- Algorithmic programming
- Script programming
- Use of databases

4 Participation requirements

None

5 Form of assessment

Performance examination or project work or written examination

6 Condition for the award of credit points

Passed module examination and issued test for the practical course

7 Application of the module (in the following study programmes)

WIM

8	**Module coordinator**
	Prof. Dr. rer. nat. Philip Wette
9	**Other information**
	-

Feedback Control Engineering

No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q-level
4.3	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	Course type	Contact time	Self-study	Forms of teaching (learning methods)	Planned group size	Language
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	24 h			40	

2 Learning outcomes/competences

The students understand the basic terms, ideas and methods of control engineering and know the structure and effect of technical and non-technical control loops. They can analyse real systems, transfer them into technical sketches and diagrams as well as into signal flow graphs and transfer functions. They can identify controlled systems, design standard linear control loops and create simple controllers to suit the real systems and simulate the control system.

3 Contents

Lecture/Exercise

- Classification of technical and non-technical processes
- Description of static and dynamic behaviour
- Creation of a mathematical model (DGL, transfer function)
- Electrical-physical modelling and simulation
- Properties of elementary transfer elements
- Analysis of control systems in the time and frequency domain
- Requirements for a control loop
- Dimensioning of simple linear controllers
- Stability definitions and corresponding criteria

Practical

- Structural analysis of oscillatory systems
- Control identification of a thermal system
- Design and realisation of controllers for a thermal system

4 Participation requirements

Formal: None
Content: Knowledge of the module “Electrical Engineering and Electronics”

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Passed module examination and issued attestation for the practical course

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr.-Ing. Volker Becker

9 Other information

-

Leadership Skills								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
4.4	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	3 SCH	126 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2	**Learning outcomes/competences** The students have acquired important key competences that are indispensable for a successful career as an industrial engineer. The students know the theoretical and practical basics for professional communication. Furthermore, they are able to give speeches and presentations and to receive and give feedback. Students can use methods to motivate and lead employees effectively. In addition, they know important techniques that they can use in their own negotiations and be able to apply working and creativity techniques situationally.
3	**Contents** • Communication & feedback • Rhetoric & presentation • Leadership & appraisal • Negotiation techniques • Work & creativity techniques
4	**Participation requirements** None
5	**Form of assessment** Oral examination or project work or combination examination
6	**Condition for the award of credit points** Module examination pass
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** Prof. Dr. Michael Mohe
9	**Other information** -

Organisation and Human Resource Management								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
4.5	150 h	5	4th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students can assess the significance of organisational theories and new organisational models in general and for practice. They know important and modern forms of structural and procedural organisation and can apply them. They are familiar with the challenges of organisational change. Furthermore, they know the essential stages and instruments of personnel management (e.g. personnel requirement planning to personnel release). As a result, students are able to reflect on personnel and organisational processes in companies and to carry out corresponding projects in companies.

3 Contents

- Current challenges for organisations
- Organisational theories
- Future trends in organisational structure
- From structure to process
- Organisational change
- Work organisation
- Levels of human resource management

4 Participation requirements

None

5 Form of assessment

Written examination or project work or combination exam

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Michael Mohe

9 Other information

-

Project in Industry 2								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
5.1	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Work-related project	According to need	150 h	Work-related module	Individual work / faculty tutoring	German, by agreement English

2	**Learning outcomes/competences** The students are able to mirror theoretical references of industrial engineering and management on application fields in practice. They can recognise and analyse typical engineering and/or business management problems and independently develop solution options. In the work-related modules, the students acquire the ability to connect and reflect on the "world of practice" and the "world of science."
3	**Contents** The topics to be worked on are related to engineering and/or business administration and are based on the module contents of the curriculum. The topic is decided individually between the student and the faculty tutors is coordinated with their faculty tutors in the company and at the university.
4	**Participation requirements** Formal: None Content: Knowledge from the module "Methods of Scientific Work – Project Management"
5	**Form of assessment** Term paper
6	**Condition for the award of credit points** Module examination pass
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** All teaching staff
9	**Other information** -

Technical English								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
5.2	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory	B.A.

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with self-study materials	40	English
	Exercise	2 SCH			40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

On successful completion of the module, students have the following knowledge and skills:

- They can understand and summarise English texts and documents about industrial engineering and management.
- They are able to communicate in English with colleagues in meetings on topics related to industrial engineering.
- They can make telephone calls in English.
- They can produce simple written pieces in English on topics related to industrial engineering.
- They are able to use English technical vocabulary in their profession.

3 Contents

- Applied Technologies
- Materials Engineering
- Constructive Design
- Technical Problems
- Technical Development
- Monitoring and Control

4 Participation requirements

None

5 Form of assessment

Written examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Cathrine Stones

9 Other information

-

Control and Automation Technology								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
5.3	150 h	5	5th sem.	Annual	Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	102 h	Seminar lessons with	40	German
	Exercise	1 SCH		self-study materials	40	
	Practical / Seminar	1 SCH			16	
	Supervised self-study	24 h			40	

2 Learning outcomes/competences

The students are familiar with numerous application examples of automation technology and have internalised the underlying system. They have a sound knowledge of the design and development of automation systems using classic connection-programming technology as well as digital microcontroller and PLC technology and can apply this to automation projects. They can explain the networking of automation components with each other and with control rooms. In sum, the students are thus able to evaluate and design basic automation systems.

3 Contents

Lecture/Exercise

- Automation systems at a glance
- Design and simulation of automation systems
- Interfaces to the process, sensors and actuators
- Function and structure of programmable logic controllers (PLC)
- Programming of programmable logic controllers (PLC)
- Automation examples
- Bus and peripheral systems
- Process visualisation and modern engineering tools
- Trends in automation systems (real-time capability, networking)

Practical “Taktstraße”

- Commissioning of hardware and manual functions, visualisations
- Operating modes and sequencer with sequential process
- Sequencer with parallel processes

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Passed module examination and issued attestation for the practical course

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr.-Ing. Volker Becker

9 Other information

-

Elective Module Business Administration: Marketing Management								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
5.4	150 h	5	5th/7th sem.	Annual	Winter	1 sem.	Compulsory elective	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students know and master the most important methods with which a company can assess and further develop its strategic positioning on the market. They have a basic knowledge of marketing psychology and are able to adapt the strategic and operational instruments of marketing. They have case-related knowledge in the creation of marketing concepts and are able to recognise and use interrelationships, synergies and interdependencies between the individual instruments of product, price and promotion policy. Assuming a concrete market and company situation, students are able to combine strategic and operative marketing instruments into a concept and organise this in the company. An insight into current trends (e.g. online/social/new marketing) raises awareness of innovative marketing opportunities.

3 Contents

- Marketing psychology
  - Buyer behaviour and purchase decision types
- Social techniques and impact research
- Marketing tools and strategies
  - Product policy: Market segments, product requirement analysis
  - Pricing policy: Price formation and behavioural insights
  - Communication policy: CI, sales promotion, PR, sponsoring, events
  - Distribution policy
- Marketing organisation
- Current trends in marketing

4 Participation requirements

None

5 Form of assessment

Written examination or project work or combination examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Michael Mohe

9 Other information

-

Elective Module Business Administration: Quality Management

No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q-level
5.5	150 h	5	5th/7th sem.	Annual	Winter	1 sem.	Compulsory elective	BA

1	Course type	Contact time	Self-study	Forms of teaching (learning methods)	Planned group size	Language
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students have basic and, in selected areas, in-depth knowledge of quality management in industrial companies and can apply this in their studies and practice.

They are able to

- identify essential quality-related aspects, contexts, questions and problems and classify them professionally.
- communicate adequately on quality-related topics in an interdisciplinary manner.
- research in-depth content in a targeted manner.
- deal with quality-related questions and problems in a methodologically adequate way.

3 Contents

Lecture/Exercise

- QM basics
  - Understanding, meaning, tasks, principles
  - QM organisation in companies
- QM methods and tools
  - Elementary QM tools
  - QM in product development, production and procurement
- QM systems
  - Reference QM systems (ISO 9000, 6 , EFQM, ...)
  - Computer Aided QM (CAQ)

4 Participation requirements

None

5 Form of assessment

Written examination or oral examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM, MBM

8 Module coordinator

Prof. Dr.-Ing. Volker Becker

9 Other information

-

Elective Module Business Administration: Consulting								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
5.6	150 h	5	5th/7th sem.	Annual	Winter	1 sem.	Compulsory elective	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
		2 SCH		self-study materials	40	
	Exercise	---			---	
	Practical / Seminar	16 h			40	
	Supervised self-study					

2	**Learning outcomes/competences**
	Students will be able to distinguish and use the different forms of consulting in terms of their essential characteristics. They know important and modern forms of intervention and can apply them. They understand consulting processes and can design them. They know the official and latent function of consulting and are aware of its varying significance. They can understand and manage client-consultant relationships and know different ways of evaluation. The students can test what they have learned in a case study/project in an application-oriented way. As a result, students are able to take on consultant and client roles, to reflect on these and to implement corresponding projects in companies.
3	**Contents**
	• Development & definitions • Function of guidance • Counselling relationships • Counselling processes • Forms of counselling • Evaluation of the counselling service • Client perspectives • Internal consultation • Case Study/Project
4	**Participation requirements**
	None
5	**Form of assessment**
	Term paper or project work or combination examination
6	**Condition for the award of credit points**
	Module examination pass
7	**Application of the module (in the following study programmes)**
	WIM
8	**Module coordinator**
	Prof. Dr. Michael Mohe
9	**Other information**
	-

Elective Module Business Administration: Production Management

No.	Workload	Credit points	Study semester	Frequency	Sem.	Duration	Type	Q-level
5.7	150 h	5	5th/7th sem.	Annual	Winter	1 sem.	Compulsory elective	BA

1	Course type	Contact time	Self-study	Forms of teaching (learning methods)	Planned group size	Language
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

The students have a confident, deepened understanding of integrated production systems and processes. They are able to

- systematically explain the structure, principles and functions of integrated production systems, subsystems, commercial-technical processes and their interrelationships.
- formulate economic-technical questions and solution approaches based on this.
- conduct targeted research for more in-depth content.
- make decisions about the advantages of individual solving approaches, methods and technologies and realise simple operational optimisations.

3 Contents

Lecture/Exercise

- Production Management – Basics
- Production and logistics / supply chain management systems
- Total process and consolidation of selected sub-processes
- Production monitoring and optimisation
- IT systems in production
- Current developments

4 Participation requirements

None

5 Form of assessment

Written examination or combination examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Christoph von Uthmann

9 Other information

-

Project in Industry 3								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
6.1	150 h	5	6th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Work-related project	According to need	150 h	Work-related module	Individual work / faculty tutoring	German, by agreement English

2	**Learning outcomes/competences** The students are able to mirror theoretical references of industrial engineering and management on application fields in practice. They can recognise and analyse typical engineering and/or business management problems and independently develop solution options. In the work-related modules, the students acquire the ability to connect and reflect on the "world of practice" and the "world of science."
3	**Contents** The topics to be worked on are related to engineering and/or business administration and are based on the module contents of the curriculum. The topic is decided individually between the student and the faculty tutors is coordinated with their faculty tutors in the company and at the university.
4	**Participation requirements** Formal: None Content: Knowledge from the module "Methods of Scientific Work – Project Management"
5	**Form of assessment** Term paper
6	**Condition for the award of credit points** Module examination pass
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** All teaching staff
9	**Other information** -

Applied Science Project								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
6.2	150 h	5	6th sem.	Annual	Summer	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Project	---	German
	Exercise	---			---	
	Practical / Seminar	2 SCH			16	
	Supervised self-study	---			---	

2	**Learning outcomes/competences**
	The students can grasp current and, if necessary, interdisciplinary problems of economic and/or engineering research and practice, divide them into meaningful sections and solve them. They are able to work in a team and can connect the scientific research approach with the practical world. The students can apply theoretical knowledge already acquired and to be acquired to concrete problems. They also learn the necessary competences for knowledge transfer within the group.
3	**Contents**
	The content is based on classical or current engineering and/or business topics. The students use the knowledge they have acquired in theory and practice and combine the scientific approach with a complex practical task. The topic is decided by the respective subject supervisor at the beginning of the semester.
4	**Participation requirements**
	None
5	**Form of assessment**
	Project work
6	**Condition for the award of credit points**
	Module examination pass
7	**Application of the module (in the following study programmes)**
	Interdisciplinary/cross-curricular use – ELM, MBM, WIM
8	**Module coordinator**
	All teaching staff
9	**Other information**
	-

Production Planning and Control								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
6.3	150 h	5	6th sem.	Annual	Summer	1 sem.	Compulsory	B.A.

1	**Course type**	**Contact time**	**Self- study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	110 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	0 SCH			--	
	Supervised self-study	24 h			40	

2 Learning outcomes/competences

Students are taught basic knowledge for solving the diverse planning tasks in production and in a production control system. The students are able to understand the essential tasks of work preparation, as they have become familiar with the tasks and problems of the area of work preparation within the production chain and know various problem-solving methods. They have acquired skills and abilities that enable them to work as engineers in the work preparations of production companies. Work preparation can be seen as an important working area for many engineers working in production at major companies.

3 Contents

- Tasks of work preparation and its position in companies
- Planning preparation and value analysis/management
- Bill of material and work processing sheet creation
- Programming of production equipment
- Planning of operating resources – Construction of manufacturing resources
- Further planning tasks
  - Cost, test, technical investment, methods and material planning
- Production control
  - Functions of ERP and manufacturing resource planning (MRP II) systems
  - Lead time scheduling and capacity planning

4 Participation requirements

None

5 Form of assessment

Written examination or performance examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM, MBM

8 Module coordinator

Prof. Dr.-Ing. Vanessa Uhlig-Andrae

9 Other information

-

Business Management								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
6.4	150 h	5	6th sem.	Annual	Summer	1 sem.	Compulsory	B.A.

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students are familiar with the basics of planning and strategic management. They know and understand different schools of thought of strategic management, corresponding strategy approaches (e.g. resource-based view) and management concepts (e.g. knowledge/innovation management). Furthermore, students can distinguish between various operational, tactical and strategic planning instruments. As a result, the students are able to manage processes in companies and also to apply this knowledge in the workplace within the framework of international cooperation.

3 Contents

- Fundamentals of Planning and Strategic Management
- Schools of thought in Strategic Management
- Strategic Approaches
- Management concepts
- Operational, tactical and strategic planning tools
- International/intercultural perspectives

4 Participation requirements

None

5 Form of assessment

Written examination or project work or combination examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Michael Mohe

9 Other information

-

Elective Module: Sales Management								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
6.5	150 h	5	6th sem.	Annual	Summer	1 sem.	Compulsory elective	B.A.

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2 Learning outcomes/competences

Students can assess the importance of sales policy in general and apply this to practice. They are familiar with important instruments of customer analysis and can incorporate this into the design of customer relationship management. Furthermore, they can answer organisational questions of sales and structure sales processes. To this end, they can implement basic sales and motivation measures, use information systems and evaluate sales success. They have developed an understanding of international perspectives of sales management and can use these to identify special features of sales in the context of international cooperation with customers.

3 Contents

- Sales policy
- Customer analysis
- Customer Relationship Management
- Sales Organisation
- Sales Process
- Sales Information Systems
- Sales Controlling
- International/intercultural perspectives of sales management

4 Participation requirements

None

5 Form of assessment

Written examination or project work or performance examination

6 Condition for the award of credit points

Module examination pass

7 Application of the module (in the following study programmes)

WIM

8 Module coordinator

Prof. Dr. Michael Mohe

9 Other information

-

Elective Module: Industrial Information Systems								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
6.6	150 h	5	6th sem.	Annual	Summer	1 sem.	Compulsory elective	B.A.

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Lecture	2 SCH	118 h	Seminar lessons with	40	German
	Exercise	2 SCH		self-study materials	40	
	Practical / Seminar	---			---	
	Supervised self-study	16 h			40	

2	**Learning outcomes/competences** The students have knowledge and skills for the targeted use and design/optimisation of information systems in industrial companies. They are able to • systematically explain the structure, principles and functions of integrated information systems as well as their different application fields in economic-technical industrial functions. • conduct targeted research for more in-depth content. • make decisions about the advantages of individual IT approaches and design and realise processes and IT optimisation.
3	**Contents** Lecture/Exercise • Fundamentals of Industrial Information Systems • Intra- and inter-company IT application fields and IT system classes in industrial enterprises • Information system design/optimisation • Current developments
4	**Participation requirements** None
5	**Form of assessment** Written examination or combination examination
6	**Condition for the award of credit points** Module examination pass
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** Prof. Dr. Christoph von Uthmann
9	**Other information** -

Bachelor Thesis								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
7.1	360 h	12	7th sem.		Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self- study**	**Forms of teaching (learning methods)**	**Planned group size**	**Language**
	Bachelor thesis	According to need	360 h	Project work	Individual work / faculty tutoring	German, by agreement English

2	**Learning outcomes/competences** With the bachelor thesis, students demonstrate that they are capable of independently working on a practice-oriented task from the respective subject area, both in its subject-specific details and in the interdisciplinary contexts, according to scientific methods within a specified period of time.
3	**Contents** Thesis according to topic. Written elaboration
4	**Participation requirements** See Section 22 SPO WIM
5	**Form of assessment** Bachelor thesis
6	**Condition for the award of credit points** Passed bachelor thesis
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** All teaching staff
9	**Other information** -

Colloquium								
No.	**Workload**	**Credit points**	**Study semester**	**Frequency**	**Sem.**	**Duration**	**Type**	**Q-level**
7.2	90 h	3	7th sem.		Winter	1 sem.	Compulsory	BA

1	**Course type**	**Contact time**	**Self-study**	**Forms of teaching (forms of learning)**	**Planned group size**	**Language**
	Colloquium	According to need	90 h	Lecture and thesis defence	Individual work / faculty tutoring	German, by agreement English

2	**Learning outcomes/competences** The colloquium is to be assessed as an independent examination. It serves to determine whether the candidate is capable of orally presenting and independently justifying the scientific topic of the bachelor thesis, its subject-related foundations, its interdisciplinary connections and its non-subject-related references, as well as assessing its significance for practice.
3	**Contents** Content of the thesis according to the topic Defence of the procedure followed in the preparation of the thesis and questions that arose in the context of the thesis.
4	**Participation requirements** See Section 22 SPO WIM
5	**Form of assessment** Oral examination
6	**Condition for the award of credit points** Module examination pass
7	**Application of the module (in the following study programmes)** WIM
8	**Module coordinator** All teaching staff
9	**Other information** -