

**The following text was translated using AI (DeepL)
Only the original German version is binding.**

Module Handbook

Faculty of Technology and Business, Industrial Engineering Program

leading to a Bachelor of Engineering (B.Eng.) degree

Date of Introduction:	September 1, 2025
Program Director:	Prof. Dr. Rainald Kasprick
Date created:	October 29, 2025
Workload:	1 ECTS = 25 hours
Course Code:	6

Overview of the Program's Modules

Module	Instructor
G1 Mathematical Foundations 1	Prof. Dr. Andreas Heinz
G2 Fundamentals of Computer Science 1	Prof. Dr. Gertraud Peinel
G3 Fundamentals of Engineering 1	Prof. Dr.-Ing. Ingo Kühne
G4 Fundamentals of Electrical Engineering	Prof. Dr.-Ing. Ingo Kühne
G5 Fundamentals of Economics	Prof. Dr.-Ing. Wolfgang Ernst
G6 Mathematical Foundations 2	Prof. Dr. Andreas Heinz
G7 Fundamentals of Computer Science 2	Prof. Dr. Gertraud Peinel
G8 Fundamentals of Engineering 2	Prof. Dr.-Ing. Ingo Kühne
G9 External Accounting	Prof. Dr. rer. pol. Martin Tettenborn
G10 Fundamentals of Social Sciences	Prof. Dr.-Ing. Wolfgang Albrecht
H1 Electronics and Measurement Technology	Prof. Dr.-Ing. Ingo Kühne
H2 Computer-Aided Design	Prof. Dr.-Ing. Martin Wäldele
H3 Manufacturing Technology and Automation	Prof. Dr.-Ing. Martin Wäldele
H4 Internal Accounting	Prof. Dr. rer. pol. Martin Tettenborn
H5 Market Design Methods	Prof. Dr. Rainald Kasprik
H6 Technical Systems and Materials	Prof. Dr.-Ing. Ingo Kühne
H7 Investment and Financing	Prof. Dr. rer. pol. Martin Tettenborn
H8 Production Management	Prof. Dr.-Ing. Wolfgang Ernst
H9 Analysis of Empirical Data	Prof. Dr. Andreas Heinz
H10 Project Management and Rhetoric	Prof. Dr. Gertraud Peinel
P Practical Study Semester	Prof. Dr. Gertraud Peinel
H11 Control and Regulation Technology	Prof. Dr.-Ing. Ingo Kühne
H12 Purchasing and Sales Management 1	Prof. Dr.-Ing. Wolfgang Albrecht
H13 Accounting	Prof. Dr. rer. pol. Martin Tettenborn
H14 Production Management (Advanced)	Prof. Dr.-Ing. Wolfgang Ernst
H15 Electives	Prof. Dr. Rainald Kasprik
H16 General Engineering Studies	Prof. Dr.-Ing. Ingo Kühne
H17 Purchasing and Sales Management 2	Prof. Dr.-Ing. Wolfgang Albrecht
H18 Business Management	Prof. Dr. Rainald Kasprik
H19 Integrative Project Work	Prof. Dr. Gertraud Peinel
BT Final Exam	Prof. Dr. Rainald Kasprik

Objectives of the Industrial Engineering Program

Graduates will be able to evaluate complex projects or situations involving high economic risk from both an engineering and an economic perspective.

Students are trained to evaluate both the technical and commercial efficiency of solutions.

The program thus prepares students for industries that either manufacture complex, customer-oriented goods or provide project services for these industries. Particular emphasis is placed on the business context of customer-oriented single-unit or small-batch production of complex industrial goods—that is, the design of a machine or component in collaboration with the customer and its implementation as a business project.

Foundation Phase

Module G1 226000 Mathematical Foundations 1

Duration of the Module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Credit Points	Passing the Basic Math Test is required to be eligible to take Exam 225001 Mathematics 1. The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Andreas Heinz
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Combined exam with a written exam as the final assessment
Course Content	Mathematical Foundations 1 Mathematics 1
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students acquire fundamental mathematical knowledge required in a practical professional setting to solve relevant business and technical tasks.
Professional Competence: Skills, Knowledge Acquisition	Ability to independently plan, carry out, and evaluate business and technical problems using mathematical methods.
Personal Competence: Social Competence	
Personal Competence: Independence	Insights based on the application of mathematical methods should be able to be presented and defended in discussions with experts .
Competency level according to the DQR	6
Prerequisites for Participation	Passing the Basic Math Test in order to take the Math 1 exam.

Special Features / Availability	• Free preparatory course or Math bridge course before the first semester; see https://www.hs-heilbronn.de/de/o-phase-kuen • Passing the Basic Math Test is required to take the Math 1 exam. • Math tutorials for Math 1 and Math 2 during the semester; see the course schedule for the respective semester Timetable: https://splan.hs-heilbronn.de/
Scheduling in the course schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	Will be published in ILIAS for the respective course during the first three weeks of lectures.

Course G1.1 226001 Mathematics 1

This course is a required course in Module G1

Course Coordinator	Prof. Dr. Andreas Heinz
Semester	1
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Mathematics 1
Credits (ECTS)	7.5
SWS	6.0
Workload - Contact Hours	67.5
Workload - Self-study	120
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessed throughout the course via a combined exam, with a written exam as the final assessment
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Passing the Basic Math Test is required to be eligible to take Exam 226001, Mathematics 1.
Teaching/Learning Methods (Instructional Formats)	Weekly Hours: Lecture 4 hours, Exercise 2 hours Teaching Methods: Lecture with integrated exercises Learning Methods: Review of lecture material, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students are familiar with the functions essential for applications and can analyze them. They have mastered the fundamental concepts and computational techniques of linear algebra.
Subject-Specific Competence: Skills and Knowledge Acquisition	Students are able to analyze and apply mathematical models to technical and economic topics. For example, students are familiar with complex numbers and can apply them to technical problems (superposition of oscillations). Analytical skills are taught, and the ability to think abstractly is fostered.
Personal Competence: Social Competence	Students can independently form study groups and work on assignments together.
Personal Competence: Independence	Students are able to work on tasks independently.
Competency level according to the DQR	6

Content	Learning Outcomes: (formerly Learning Objectives) • Fundamentals • Linear Algebra • Functions and Their Properties • Sequences, Limits, and Continuity • Differential Calculus • Series Learning Objectives: Mastery and evaluation of mathematical methods for modeling engineering and business management phenomena
Recommendation for accompanying courses	Preparatory course or bridge course before the first semester; see https://www.hs-heilbronn.de/de/o-phase-kuen Math tutorials for Math 1 and Math 2 during the semester; see the course schedule for the respective semester Timetable: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	• Lecture notes and exercise materials • Fetzer, A. / Fränkel, H.: Mathematics, Volumes 1 + 2, Springer • Papula, L.: Mathematics for Engineers and Scientists, Volumes 1 + 2, Vieweg • Hammond, P. / Sydsaeter, K.: Mathematics for Economists, Pearson • Tietze, J.: Introduction to Applied Mathematical Economics, Vieweg
Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	Will be posted in ILIAS for the respective course during the first three weeks of lectures.

Module G2 226005 Fundamentals of Computer Science 1

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Gertraud Peinel
Teaching, Learning, and Assessment Methods	Teaching method: Lecture with integrated exercises Learning format: Review of lecture material, solving problems in exercises and/or at home Exam format: Written
Course Content	Fundamentals of Computer Science 1 • Fundamentals of Business Informatics (concepts in computer science, information and data, computer architecture, operating systems, hardware, networks, and the Internet) • Modeling (Introduction to the concept of business informatics models, entity-relationship modeling) • Databases (Fundamentals of relational databases, SQL data definitions, SQL queries, views, triggers, transactions, user management)
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students learn how a computer is structured, how computers are used in companies and organizations, and the problems associated with them as well as possible solutions. An introduction to big data and the Internet of Things highlights additional future opportunities.
Professional Competence: Skills, Knowledge Acquisition	Students learn the fundamentals of computer science and gain insight into how computers and networks function. They learn how business data is structured (modeling) and stored, processed, and—in particular—retrieved in computers and databases (SQL).
Personal Competence: Social Competence	Students learn to discuss different approaches and solutions in small groups and to develop them collaboratively.
Personal Competence: Independence	Students learn to work through tasks independently: in the area of converting between decimal, hexadecimal, and binary number systems; in modeling (ER diagrams); and in working with relational databases.
Competency Level According to the DQR	6
Prerequisites for Participation	None
Special Features / Applicability	Nowadays, the fundamentals of computer science are required for nearly all business applications and in all technical degree programs. The module can therefore be used as a foundation in all technical degree programs, as well as in business administration programs to cover topics in business informatics.

Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course G2.1 226006 Computer Science 1

This course is a required course in Module G2

Course Instructor	Prof. Dr. Gertraud Peinel
Semester	1
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Computer Science 1
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Knowledge and understanding at the level required for university admission
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 2 SWS, Seminar 2 SWS Teaching Methods: - Lecture with short exercises - Sections involving individual and group work Learning Methods: - Pre- and post-class preparation using the lecture slides, independent problem-solving, reading the assigned literature

Subject-Specific Competence: Knowledge and Understanding	Students possess integrated subject knowledge in computer science that corresponds to the integrated professional knowledge of, for example, an IT specialist as defined by the IT Continuing Education Regulation Students have a general overview of the application areas of computer science and have also gained a more detailed technical understanding of some of them (networks, computer components, operating systems). Students understand the concept of a model in business informatics and can independently model real-world objects using ER diagrams. They understand how ER models are stored in databases. Students can identify the purpose, requirements, and key components of databases. They can define a relational database and explain the rationale behind this definition. Furthermore, they can expertly apply data modeling and basic SQL skills in their studies and professional careers. Students have grasped the fundamentals of relational algebra and can formulate even more complex queries. In addition, they understand the core functionalities of a relational database, such as triggers, views, the concept of transactions, and user management.
Professional Competence: Skills and Knowledge Acquisition	Students can design ERM diagrams independently. They can convert a given relational schema into third normal form. Students can create, populate, and modify SQL database tables on their own, as well as apply the relational database language SQL to perform various queries—including more complex ones—on a relational database.
Personal Competence: Social Competence	Students learn teamwork as they solve assigned tasks in small groups during the exercises.
Personal Competence: Independence	Students learn to solve assigned tasks independently and to critically discuss different results. They examine and question topics in computer science and learn to independently acquire their own knowledge of computer science using the Internet and search engines. Students learn to create, test, and correct assigned tasks (e.g., SQL queries) on their own.
Competency level according to the DQR	5–6

Content	Learning Objectives: Fundamentals of Business Informatics (concepts in computer science, information and data, computer architecture, operating systems, hardware, networks, and the Internet) Modeling (introduction to the concept of business informatics models, entity-relationship modeling) Databases (Fundamentals of relational databases, SQL data definitions, SQL queries, views, triggers, transactions, user management) Competency Objectives: Understanding and applying computer technology, understanding the purpose of modeling and the ability to model data, as well as understanding and applying the fundamentals of databases.
Recommendation for accompanying courses	
Other Special Features	
Literature/Learning Resources	• Duden Informatics, preferably the latest edition • Gumm, H. and Sommer, M.: Introduction to Computer Science, Munich and Vienna: Oldenbourg, latest edition if possible • Gerken, W.: Database Systems for Dummies, Wiley-VCH, 2023 • Kudraß, T.: *Databases: A Pocket Guide*: with ... 28 tables, Fachbuchverl. Leipzig, published by Carl-Hanser-Verl., 2015, 2nd edition • Gadatsch, A.: Data Modeling: An Introduction to Entity-Relationship Modeling and the Relational Model (Essentials), Springer Vieweg; 2nd Edition (March 13, 2019)
Scheduling in the Course Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module G3 226010 Fundamentals of Engineering 1

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Teaching method: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Fundamentals of Engineering 1 • Physics • Engineering Mechanics 1
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students are taught critical, quantitative, and scientific thinking in fundamental areas of physics and engineering mechanics. They acquire broad and integrated knowledge.
Professional Competence: Skills, Knowledge Acquisition	Students will be able to: • Develop and apply physical models • Explain and solve problems in engineering mechanics • Quantitatively solve application-oriented problems • Design and conduct experiments
Personal Competence: Social Competence	• Explain physical relationships and problems in engineering mechanics, justify their practical implications, and communicate them comprehensively. • Develop engineering solutions to problems in a group.
Personal Competence: Independence	• Students are able to assess and evaluate problems in physics and technical mechanics. • Students independently explore and deepen their understanding of topics covered in the lectures.
Competency level according to the DQR	6

Prerequisites for Participation	Prerequisite for successfully completing the module "Fundamentals of Engineering 1" (G3 226010): • Basic knowledge of mathematics. (Elementary functions, solving equations, vector calculus, basic differential and integral calculus.) • If you are unsure about any of the topics listed, we recommend taking the preparatory course or bridge course in mathematics one week before the start of the lecture period.
Special Features / Applicability	Among other things, this module lays the technical foundation for acquiring engineering competencies in the advanced study phase.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course G3.1 226011 Physics

This course is a required course in Module G3

Course Coordinator	Prof. Dr.-Ing. Ingo Kühne
Semester	3
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Physics
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours. The specified workload assumes knowledge and understanding at the level required for college admission. Completing the lecture exercises through self-study can be supported by a tutorial.
Exam Type	Conducted as part of the course via a written exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Basic knowledge of mathematics (elementary functions, solving equations, vector calculus, basic differential and integral calculus. Attendance in the preparatory mathematics course is recommended if you are unsure about these topics.)
Teaching/Learning Methods (Instructional Formats)	Weekly Hours: Lecture 3.6 hours, Seminar 0.4 hours Teaching Methods: Lecture with integrated exercises Learning Methods: Review of lecture material, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	In-depth general knowledge and understanding of the fundamental principles of physics in the fields of classical mechanics, optics, thermodynamics, and atomic/nuclear physics, and their mathematical description. Independent analysis of physics problems using practice exercises.
Professional Competence: Skills and Knowledge Acquisition	Students possess a broad spectrum of specialized cognitive and practical skills. Knowledge acquisition through comprehensive application, particularly through physics exercises.

Personal Competence: Social Competence	Explaining physical laws, justifying their practical implications, and communicating them comprehensively. Developing solutions to physics problems in a group.
Personal Competence: Independence	Define, reflect on, and evaluate goals for learning and work processes when developing foundational knowledge in physics, and independently and sustainably structure learning and work processes, particularly through practice problems.
Competency Level According to the DQR	6
Content	The course covers, among other things, fundamental subfields of physics: • Classical mechanics (kinematics, dynamics, conservation laws, friction, aerostatics and hydrostatics/hydrodynamics, oscillations, and waves). • Optics (reflection, refraction, imaging, optical instruments, waves, interference, diffraction, and diffraction-limited resolution of optical instruments). • Thermodynamics (temperature, kinetic theory of gases, calorimetry, Carnot cycle). • Atomic and Nuclear Physics (atomic models, elementary particles, X-rays, isotopes, and radioactive decay). Learning Outcomes: • Basic knowledge in these subfields of physics. Qualification Objectives: • Understanding of physical modeling. • Mastery of qualitative and quantitative methods for solving physics problems.
Recommendation for accompanying courses	Preparatory course or bridge course in mathematics two weeks before the start of the lecture period; see the course schedule: https://www.hs-heilbronn.de/de/o-phase-kuen Physics tutorial during the semester; see the course schedule: https://splan.hs-heilbronn.de/ Attendance at the accompanying lecture "Engineering Mechanics 1" is strongly recommended; see the course schedule: https://splan.hs-heilbronn.de/
Other Special Notes	

Literature/Learning Resources	• P. A. Tipler. Tipler Physics: For Students of the Natural Sciences and Engineering. 9th updated edition. Spektrum Textbook. Springer Berlin / Heidelberg, 2024. • A. Knochel. Workbook for Tipler/Mosca, Physics: All Exercises and Questions with Solutions for the 8th Edition. Springer Berlin Heidelberg, 2019. • D. Halliday. Halliday Physics. 3rd updated edition. Wiley, 2017. • D. Halliday. Workbook for Halliday Physics: Solutions to the Exercises in the 3rd Edition. Wiley, 2017. • D. Meschede. Gerthsen Physics. 25th updated edition. Springer Textbook. Springer Berlin Heidelberg, 2015. • H. Stroppe. Stroppe PHYSICS: For Students of Natural Sciences and Engineering. 17th updated edition. Carl Hanser Verlag GmbH & Company KG, 2023. • H. Kuchling. Pocket Guide to Physics. 22nd updated edition. Carl Hanser Verlag GmbH & Company KG, 2022.
Schedule in the Course Catalog	Course Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course G3.2 226012 Engineering Mechanics 1

This course is a required course in Module G3

Course Coordinator	Prof. Dr.-Ing. Norbert Wellerdick
Semester	1
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Engineering Mechanics 1
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Conducted as part of the course via a written exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	High school mathematics
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly course hours (SWS): Lecture 1 SWS, Exercise 1 SWS Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students possess broad and integrated subject knowledge in selected areas of engineering mechanics. In particular, they can • calculate bearing reactions for planar, statically determinate systems, • determine centers of gravity, and • determine the section and stress values of planar beam structures. • They can compare the calculations and interpret them accordingly.
Professional Competence: Skills and Knowledge Acquisition	Simple methods for calculating support and section reactions (forces and moments) of planar systems of rigid bodies are taught.
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6

Contents	Learning Outcomes: • Axioms of Statics • Equilibrium Conditions • Support and Intermediate Bearings • Calculations for Planar Systems • Planar Trusses (Bar Trusses) • Focus • Stress Parameters Learning Objectives:
Recommended companion courses	Technical Mechanics 1 tutorial during the semester; see course schedule: https://splan.hs-heilbronn.de/ Attendance at the accompanying Physics lecture is strongly recommended; see the course schedule for the respective semester: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	• Literature and information sources (Internet, ChatGPT) on the topic of Fundamentals of Engineering Mechanics, particularly in the subfield of statics of rigid bodies For example: • Gross, D.; Hauger, W.; Schnell, W.: Technical Mechanics, Volumes 1, 2, and 3, Springer • Holzmann, G.; Meyer, H.; Schumpich, Technical Mechanics: Statics, Springer Vieweg, • Böge, Alfred, Böge, Wolfgang: Engineering Mechanics: Statics, Friction, Dynamics, Strength of Materials, Fluid Mechanics, 32nd edition, Springer Vieweg
Schedule in the Course Catalog	Class schedule: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module G4 226015 Fundamentals of Electrical Engineering

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Teaching method: Lecture Learning method: Lecture review, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Fundamentals of Electrical Engineering Electrical Engineering
Professional Competence: Knowledge and Understanding (Learning Objectives)	This module covers the engineering fundamentals in the field of electrical engineering.
Professional Competence: Skills, Knowledge Acquisition	Students can identify and explain engineering principles in the field of electrical engineering and apply computational methods.
Personal Competence: Social Competence	- Explain electrical engineering concepts, justify their practical implications, and communicate them comprehensively. - Develop solutions to electrical engineering problems in a group.
Personal Competence: Independence	Students independently explore and deepen their understanding of topics covered in the lectures.
Competency level according to the DQR	6
Prerequisites for Participation	Prerequisite for successfully completing the module "Fundamentals of Electrical Engineering": - Basic knowledge of mathematics. - Free preparatory course or math bridge course before the first semester; see https://www.hs-heilbronn.de/de/o-phase-kuen

Special Features / Applicability	Among other things, this module lays the technical foundation for acquiring engineering competencies during the advanced study phase. • Free preparatory course or math bridge course before the first semester; see https://www.hs-heilbronn.de/de/o-phase-kuen • Tutorials for Electrical Engineering during the semester; see the course schedule for the respective semester Timetable: https://splan.hs-heilbronn.de/
Scheduling in the course schedule	Timetable: https://splan.hs-heilbronn.de/
Course Assessment via Combined Exam	

Course G4.1 226016 Electrical Engineering

This course is a required course in Module G4

Course Coordinator	Prof. Dr. Ingmar Groh Prof. Dr.-Ing. Andreas Krug
Semester	1
Frequency	Every semester
Course Type	Lecture
Language of Instruction	German
Course Name (English)	Electrical Engineering
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	60
Workload - Independent Study	65
Detailed Note on Workload	SWS = 4.0, which corresponds to a workload of 125 hours The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessment takes place during the course via an exam
Exam duration	120
Requirement	Required course
Prerequisites for participation	Knowledge and understanding at the level required for university admission.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 4 SWS Teaching methods: In-person seminar-style classes and online exercises with breakout sessions Learning Methods: Lecture preparation and follow-up, self-study, independent participation in exercises, and online presentation of results
Subject-Specific Competence: Knowledge and Understanding	Upon successful completion of the module, students will possess the following professional competence: • identify and calculate electrical quantities • calculate direct- and alternating-current electrical circuits using various methods
Professional Competence: Skills and Knowledge Acquisition	Students possess a broad range of specialized cognitive and practical skills. They are proficient in the methods for analyzing direct and alternating current electrical circuits.
Personal Competence: Social Competence	Students • can explain the fundamentals of electrical engineering, justify their practical applications, and communicate them comprehensively. • develop appropriate solutions to problems, primarily through group work.

Personal Competence: Independence	Students can independently explore problems presented in the lecture in greater depth.
Competency level according to the DQR	6
Content	Learning Outcomes: Students have mastered the methods for analyzing direct-current and alternating-current electrical circuits. Qualification Objectives: Students can apply important physical laws and engineering methods from electrical engineering Course Content: • Basic Concepts (Charge, Current, Potential, Voltage, Work, Power, Resistance, Conductance) • Two-port elements (active, passive, applications) DC networks (Ohm's law, Kirchhoff's laws, resistive networks, superposition theorem, equivalent sources) • Network analysis (node potential/loop current methods, superposition principle, Kirchhoff's method) • Four-poles (description, calculation, application) • Introduction to Alternating Current (AC) Technology • AC Analysis
Recommendations for accompanying courses	Preparatory course or bridge course before the first semester; see https://www.hs-heilbronn.de/de/o-phase-kuen Tutorials for Electrical Engineering during the semester; see the course schedule: https://splan.hs-heilbronn.de/
Other Special Features	
Literature/Learning Resources	Hagmann, G. Fundamentals of Electrical Engineering, Aula-Verlag Wiebelsheim, 2005. Krug, A. Lecture Notes, Künzelsau, 2025 Ulm, J. Lecture Notes, Künzelsau, 2025 A. Führer et al., Fundamentals of Electrical Engineering 1, Hanser Verlag; Weißgerber, W.: Electrical Engineering for Engineers 1: Direct Current and Electromagnetic Fields; 9th edition. Vieweg Verlag, 2012; Weißgerber, W.: Electrical Engineering for Engineers 2: Alternating Current, Locus Curves, Transformers, and Multiphase Systems; 4th edition. Vieweg Verlag, 1999 Zastrow, D.: Electrical Engineering; Textbook and Workbook; 11th edition. Vieweg Technical Books, 1991
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Module G5 226020 Fundamentals of Economics

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Wolfgang Ernst
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture review, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Fundamentals of Economics General Business Administration
Professional Competence: Knowledge and Understanding (Learning Objectives)	Graduates of the module G5 225020 Fundamentals of Economics have a broad and integrated understanding of - the interrelationships of economic activity in a social market economy - the roles and interactions of organizational functions within a company - the legal foundations relevant to business professionals (German Commercial Code [HGB], German Civil Code [BGB]) - the activities associated with calculating operating results and preparing annual financial statements The objective of the module is to provide students with a fundamental understanding of business administration. They will learn and understand the concepts, methods, structures, and functions relevant to business administration. This will equip them with the necessary tools for their further studies in the field of manufacturing companies. Upon completion of the module, students will be able to classify the basic concepts of the business administration functional areas covered. The module enables students to map out business activities.

Professional Competence: Skills, Knowledge Acquisition	Students can apply and evaluate business calculation methods: • Balance sheet structure ratios (liquidity ratios, coverage ratios) • Cost-type, cost-center, and cost-object accounting • Static and dynamic investment analysis methods • Determining the break-even point • Full-cost and variable-cost accounting • and more Upon completion of the module, students will be able to classify the basic concepts of the business management functional areas. They are able to recognize the significance of what they have learned for manufacturing companies and to evaluate it independently. They understand the importance of these functional areas for corporate objectives.
Personal Competencies: Social Competence	Teamwork and the ability to work in a team are actively practiced through group work.
Personal Competence: Independence	Students learn to reflect on their own learning and work goals as well as those set by others.
Competency Level According to the DQR	5–6
Prerequisites for Participation	Knowledge and understanding at the level required for university admission
Special Features / Applicability	This module lays the subject-specific foundation for acquiring business administration competencies during the advanced studies phase.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course G5.1 226021 General Business Administration

This course is a required course in Module G5

Course Instructor	Prof. Dr.-Ing. Wolfgang Ernst
Semester	1
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	General Business Studies
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on the Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Conducted as part of the course via a written exam
Exam duration	120
Requirement	Required course
Prerequisites for participation	Knowledge and understanding at the level required for university admission
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lectures with discussions 3 weekly contact hours, exercises in individual and group work 1 weekly contact hour Teaching methods: Lectures delivered by the instructor. The exercises are presented by the students and, if necessary, supplemented or corrected by the instructor. Learning methods: Preparation for and follow-up on lectures; exercises on the ILIAS e-learning platform; exercises must be prepared independently, either individually or in self-organized small groups; independent study of the literature.

Subject-Specific Competence: Knowledge and Understanding	Students possess integrated subject knowledge regarding the economic behavior of firms: • Classification of business administration within the field of economics • Classification of firms within the social market economy • Tasks, terminology, and models of the functional areas: • Constitutive decisions regarding the founding of a company • Business planning and management • Finance and Accounting • Human resources • Research and Development The student has a solid understanding of the central issues in business administration, particularly with regard to decision-oriented action and the conceptual analysis of the enterprise. He or she is able to analyze and evaluate key areas of activity, functions, and decisions within a market-based enterprise.
Professional Competence: Skills and Knowledge Acquisition	Students possess action-oriented skills as well as knowledge- and information-related skills regarding: • the tasks that typically arise and must be completed in the functional areas of a business. • the economic evaluation of fundamental courses of action within the functional areas of a business.
Personal Competence: Social Competence	Through tasks they must solve independently, students acquire the ability to evaluate different approaches within a group and to cooperatively plan and organize task completion.
Personal Competence: Independence	Students are able to evaluate the framework conditions of fundamental business approaches and to reflect on their own work goals as well as those set by others. You will be able to define and reflect on work processes within companies.
Competency Level According to the DQR	5–6

Content	Learning Outcomes: Qualification Objectives: • Classification of companies within the economic system • Understanding the core functions of a company • Knowledge of the main legal forms of private and public-law companies • Associations within the economic system (unions, employer associations, chambers of commerce) • Classification of external and internal corporate accounting • Knowledge of basic calculation methods Course Outline (General Structure of the Lecture): 1. Introduction and Organizational Matters 2. Companies and Legal Structures 3. Business Planning 4. Corporate Accounting – External 5. Corporate Accounting – Internal 6. Human Resources 7. Research and Development
Recommendations for Related Courses	
Other Special Features	

Literature/Learning Resources	• Wöhe, G.: Introduction to General Business Administration, Munich: Franz Vahlen Publishers, latest edition • Schmalen, H., Pechtl, H.: Fundamentals and Problems of Business Administration, Stuttgart: Schäffer Poeschel Verlag, latest edition • Thommen, J.-P., Achleitner, A.-K., Gilbert, D. U., Hachmeister, D., Jarchow, S., Kaiser, G.: General Business Administration, Wiesbaden: Springer Gabler Verlag, latest edition • Brenzke, D.; Mietke, R.: Accounting In: Gonschorek, T.: Business Administration for Engineers, Munich: Carl Hanser Verlag, latest edition • Schweitzer, M.; Küpper, H.-U.; Friedl, G.; Hofmann, C.; Pedell, B.: Systems of Cost and Revenue Accounting, Munich: Verlag Franz Vahlen, latest edition • Oppitz, V.: Encyclopedia of Economic Feasibility Analysis, Wiesbaden: Springer Gabler Verlag, latest edition • Coenenberg, A.; Fischer, T. M.; Günther, T.: Cost Accounting and Cost Analysis, Stuttgart: Schäffer Poeschel Verlag, latest edition • Stoi, R.; Dillerup, R.: Business Management, Munich: Franz Vahlen Publishers, latest edition • Westkämper, E.: Introduction to Production Organization, Berlin, Heidelberg: Springer Verlag, latest edition • Friedl, G.; Hofmann, C.; Pedell, B.: Cost Accounting, Munich: Verlag Franz Vahlen, latest edition • Bieg, H.; Kußmaul, H.; Waschbusch, G.: Investment, Munich: Franz Vahlen Publishing, latest edition • Hirth, H.: Fundamentals of Finance and Investment, Berlin, Boston: Walter de Gruyter, latest edition • Weber, W., Kabst, R.; Baum, M.: Introduction to Business Administration, Wiesbaden: Springer Gabler Verlag, latest edition • Balderjahn, I.; Specht, G.: Introduction to Business Administration, Stuttgart: Schäffer-Poeschel Verlag, latest edition • Current literature (print and online periodicals) • Course Materials
Schedule in the course timetable	Timetable: https://splan.hs-heilbronn.de/
Assessment for Combined Exams	

Module G6 226025 Mathematical Foundations 2

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Andreas Heinz
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam format: Combined exam with a written exam as the final assessment
Course Content	Mathematical Foundations 2 Mathematics 2
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students acquire fundamental mathematical knowledge required in a practical professional setting to solve relevant business and technical tasks.
Professional Competence: Skills, Knowledge Acquisition	Ability to independently plan, carry out, and evaluate business and technical problems using mathematical methods.
Personal Competence: Social Competence	
Personal Competence: Independence	Insights based on the application of mathematical methods should be able to be presented and defended in discussions with experts .
Competency level according to the DQR	6
Prerequisites for Participation	Prerequisite for participation in Mathematical Foundations 2: Knowledge of mathematics equivalent to that covered in the "Mathematical Foundations 1" module.
Special Features / Availability	
Scheduling in the Course Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	Will be published in ILIAS for the respective course during the first three weeks of lectures.

Course G6.1 226026 Mathematics 2

This course is a required course in Module G6

Course Coordinator	Prof. Dr. Andreas Heinz
Semester	2
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Mathematics 2
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessed throughout the course via a combined exam, with a written exam as the final assessment
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Prerequisite for taking Mathematics 2: Knowledge of mathematics equivalent to the content covered in the Mathematics 1 course.
Teaching/Learning Methods (Instructional Formats)	Weekly Hours: Lecture 2 SWS, Exercise 2 SWS Teaching Methods: Lecture with integrated exercises Learning methods: Review of lecture material, assignments on the ILIAS e-learning platform
Subject-specific competence: Knowledge and understanding	
Professional competence: Skills and knowledge acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for accompanying courses	Mathematics 2 tutorial during the semester; see the course schedule: https://splan.hs-heilbronn.de/

Other Special Features	
Literature/Learning Resources	
Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the combined exam	Will be posted in ILIAS for the respective course during the first three weeks of lectures.

Module G7 226030 Fundamentals of Computer Science 2

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Gertraud Peinel
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture review, practice exercises Exam format: Written
Course Content	Fundamentals of Computer Science 2 • Software Development • Fundamentals of software, algorithms, and programming languages • Software development terminology, the software development process • Fundamentals of Object-Oriented Programming • Using Visual Basic in Visual Studio • User Interfaces and Usability • Debugging • Implementation of specific algorithms (backtracking, recursion) • Fundamentals of Software Engineering
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students have learned the fundamentals of software and software development, algorithms, and programming languages. They know what programs consist of and have learned how algorithms are formulated and executed, using sorting algorithms as an example. Students recognize the need to develop software products using engineering principles, project management methods, and software processes. They can identify key tasks in the software development process. Students are familiar with the basic concepts of object-oriented programming using the Visual Basic programming language. They can use the Visual Studio software development environment for programming. They have learned how to design and implement small programs and their user interfaces and can both explain the concept of debugging and apply its methods themselves. Students know how algorithms are implemented in a program.

Professional Competence: Skills, Knowledge Acquisition	Students can work independently with the Visual Studio software development environment and develop and test programs in Visual Basic on their own. They can independently design and implement user interfaces.
Personal Competence: Social Competence	Students develop teamwork skills by working in small groups to solve programming tasks. They examine how software can be implemented in a user-friendly manner so that even users with no prior computer science experience can use it.
Personal Competence: Independence	Students learn to solve assigned tasks (programming tasks) independently and to critically discuss different outcomes (algorithms and user interfaces).
Competency Level According to the DQR	6
Prerequisites for Participation	Prerequisite for taking Fundamentals of Computer Science 2: • Knowledge of computer science equivalent to that covered in the "Fundamentals of Computer Science 1" module.
Special Features / Applicability	Fundamentals of Computer Science are required today for nearly all business applications and in all technical degree programs. The module can therefore be used as a foundation in all technical degree programs, as well as in business administration programs to cover topics in business informatics.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Course G7.1 226031 Computer Science 2

This course is a required course in Module G7

Course Instructor	Prof. Dr. Gertraud Peinel
Semester	2
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Computer Science 2
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Conducted as part of the course via a written exam
Exam duration	120
Requirement	Required course
Prerequisites for participation	Prerequisite for taking Computer Science 2: • Knowledge of computer science equivalent to the course Computer Science 1
Teaching/Learning Methods (Instructional Formats)	Weekly hours: 2 SWS each for lecture and lab Teaching methods: Lectures with discussions and short assignments; exercises in individual and group work Learning methods: Preparation and follow-up work using the lecture slides, independent problem-solving, reading assigned literature, conducting internet searches, and applying solutions found online to one's own program

Subject-Specific Competence: Knowledge and Understanding	Students have learned the fundamentals of software and software development, algorithms, and programming languages. They know what programs consist of and have learned how algorithms are formulated and executed, using sorting algorithms as an example. Students recognize the need to develop software products using engineering principles, project management methods, and software processes. They can identify key tasks in the software development process. Students are familiar with the basic concepts of object-oriented programming using the Visual Basic programming language. They can use the Visual Studio software development environment for programming. They have learned how to design and implement small programs and their user interfaces and can both explain the concept of debugging and apply its methods themselves. Students know how algorithms are implemented in a program.
Professional Competence: Skills and Knowledge Acquisition	Students can work independently with the Visual Studio software development environment and develop and test programs in Visual Basic on their own. They can independently design and implement user interfaces. They understand how complex software development is.
Personal Competence: Social Skills	Students develop teamwork skills by working in small groups to solve programming tasks. They examine how software can be implemented in a user-friendly manner so that even users with little computer experience can operate it.
Personal Competence: Independence	Students learn to solve assigned tasks (programming tasks) independently and to critically discuss different outcomes (algorithms and user interfaces).
Competency Level According to the DQR	6

Content	Learning Objectives: • Software Development • Fundamentals of software, algorithms, and programming languages • Software development terminology, the software development process • Fundamentals of object-oriented programming • Using Visual Basic in Visual Studio • User Interfaces and Usability • Debugging • Implementation of specific algorithms (backtracking, recursion) • Fundamentals of Software Engineering Learning Objectives: Understanding the fundamentals of software and programming, acquiring basic programming skills, understanding the fundamentals of software engineering, and applying them in one's own programming.
Recommended companion courses	
Other special features	
Literature/Learning Resources	Thies, Th.: Introduction to Visual Basic with Visual Studio 2022: Ideal for anyone starting out in programming, Rheinwerk Computing
Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Course Assessment via Combined Exam	

Module G8 226035 Fundamentals of Engineering 2

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Teaching methods: Lecture with integrated exercises and lab sessions Learning method: Review of lecture material, assignments on the ILIAS e-learning platform, revision of corrected lab reports Examination format: Written exam and lab reports
Course Content	Fundamentals of Engineering 2: • Engineering Mechanics 2 • Materials Science • Physics Lab
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students acquire integrated subject knowledge in the areas of engineering mechanics and materials science and develop practical skills in conducting physics experiments.
Professional Competence: Skills, Knowledge Acquisition	Students possess a broad range of fundamental cognitive and practical skills in engineering mechanics, materials science, and physical experimentation.
Personal Competence: Social Skills	• Students form cooperative workgroups in which they plan and organize work processes. • They can present complex interdisciplinary issues in a targeted manner by analyzing their experiments. • Students are able to present complex subject-specific problems and solutions to experts in a well-reasoned manner and to further develop them in collaboration with them.

Personal Competence: Independence	• Students reflect on, evaluate, and take responsibility for their own and externally set learning and work goals, as well as the consequences of their practical implementation. • Upon successful completion of this module, students can define goals for their personal learning and work process. • They independently reflect on and evaluate their learning and work process and shape it in a sustainable manner.
Competency level according to the DQR	6
Prerequisites for Participation	
Special Features / Applicability	Among other things, the module lays the technical foundation for acquiring engineering competencies during the advanced studies phase.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course G8.1 226036 Technical Mechanics 2

This course is a required course in Module G8

Course Coordinator	Prof. Dr.-Ing. Norbert Wellerdick
Semester	2
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Engineering Mechanics 2
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required course
Prerequisites for participation	Prerequisite for enrolling in Technical Mechanics 2: Knowledge of technical mechanics equivalent to the content covered in the Technical Mechanics 1 course.
Teaching/Learning Methods (Instructional Formats)	Weekly Hours (SWS): Lecture 1 SWS, Lab 1 SWS Teaching Methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students possess foundational knowledge in selected areas of technical mechanics. In particular, they are familiar with stress analysis for simple, planar problems in elastostatics. They have knowledge of the calculation of stresses and equivalent stresses. Students possess foundational knowledge regarding simple kinematic problems in the areas of point kinematics and plane kinematics of rigid bodies. Furthermore, they can use the Newton-Euler method to derive the equations of motion for simple planar systems.
Professional Competence: Skills and Knowledge Acquisition	Students can calculate stresses and equivalent stresses for simple engineering problems and thus evaluate the system. They can use the sectioning principle and the Newton-Euler method to derive the equations of motion for simple planar systems and establish the necessary kinematic constraints.
Personal Competence: Social Competence	

Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Objectives: Elastostatics - Strength of Materials • Stresses and Deformations in a Tension Member • Moments of Inertia of Planes • Stress in a straight, flat beam under bending • Torsion of members with circular or annular cross-sections • Comparative Stresses and Component Design Kinematics • One-dimensional motion • Motion along a circular path • Moment pole Kinetic • Center of Mass Theorem (Newton) • Euler's theorem of angular momentum for planar systems
Recommendations for Related Courses	Technical Mechanics 2 Tutorial during the semester; see course schedule: https://splan.hs-heilbronn.de/ Attendance at the accompanying lecture on Materials and the accompanying physics lab is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Important Information	
Literature/Learning Resources	• Literature and information sources (Internet, ChatGPT) on the topic of Fundamentals of Engineering Mechanics, particularly regarding the subfields of elastostatics or strength of materials and kinematics/kinetics For example: • Romberg, O.; Hinrichs, N.: Don't Panic About Mechanics!, Vieweg Teubner • Gross, H.; Schröder, W.: Technical Mechanics 2, Springer • Müller, W. H.; Ferber, F.: Engineering Mechanics for Engineers • Müller, W. H.; Ferber, F.: Exercises in Engineering Mechanics, Hanser • Gabbert, U.; Raecke, I.: Engineering Mechanics for Industrial Engineers, Hanser
Schedule in the Course Catalog	Course Schedule: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Course G8.2 226037 Materials Science

This course is a required course in Module G8

Course Director	Prof. Dr.-Ing. Marcus Stolz Thomas Schill
Semester	2
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Materials Science
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Knowledge and understanding at the level required for university admission.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 1 SWS, Seminar 1 SWS Teaching methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students possess in-depth general knowledge and subject-specific theoretical knowledge in the following areas • Fundamentals of metallic materials • General fundamentals and the classification of the various main material groups • Fundamentals and practically important details of basic iron-based materials • Basic concepts of alloy formation, binary phase diagrams

Professional Competence: Skills and Knowledge Acquisition	Students will be able to • derive key technically relevant application areas from the phase diagrams for technical alloys and their base metals. • reasoned conclusions regarding the potential applications of ferrous metals versus non-ferrous metals, as well as of non-metallic inorganic (NMA) versus non-metallic organic (NMO) materials. • apply the knowledge they have acquired to specific problems. • efficiently research relevant literature. • familiarize themselves independently with technical systems.
Personal Competence: Social Competence	Students • take on responsibility within a team. • collaborate with others in a goal-oriented manner. achieve work results in groups and document them.
Personal Competence: Independence	Students • further explore the topics covered in the lecture on their own and critically examine them independently and competently. • effectively organize their own work processes.
Competency level according to the DQR	6
Content	Learning Outcomes: • Structure of Matter • Chemical bonds • Alloy Systems • States of matter • Materials and the Environment • Mechanical Properties of Materials • Thermal Material Properties • Types of Materials and Their Applications • Metals (iron-based materials, non-ferrous (NE) metals, and alloys) • Plastics • Composite materials Learning Objectives: Students will be able to explain the structure, properties, and mechanisms of materials and will be familiar with their applications.
Recommendation for accompanying courses	Attendance at the accompanying lecture "Engineering Mechanics 2" and the accompanying physics lab is strongly recommended; see the course schedule for the respective semester. Schedule: https://splan.hs-heilbronn.de/
Other Details	

Literature/Learning Resources	• Weißbach, W.: Materials Science and Materials Testing, Problem Set, Braunschweig 2015 • Domke, W.: Materials Science and Materials Testing, Düsseldorf 2001 • Macherauch, E.: Laboratory Course in Materials Science, 10th ed., Braunschweig 1992 • Aluminum Pocket Book: Volume 1, Düsseldorf 2009 • Jacobs, O.: Materials Science, Würzburg 2016 • Up-to-date references to recent sources will be provided during the course. • Course handout with additional bibliographic references.
Schedule in the course catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course G8.3 226038 Physics Lab

This course is a required course in Module G8

Course Coordinator	Prof. Dr.-Ing. Ingo Kühne
Semester	2
Frequency	Every semester
Course type	Lab
Language of Instruction	German
Course Name (English)	Physics Laboratory
Credits (ECTS)	2.5
Classes	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours. For each experiment, a lab report must be prepared that includes the analysis of the data measured in the lab, including statistical error analysis and systematic error estimation.
Exam Format	Prerequisite: Laboratory work
Exam Duration	
Requirement	Required course
Prerequisites for Participation	- Knowledge of physics equivalent to the course "Physics." - Knowledge from the introductory lectures in mathematics and electrical engineering.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Laboratory experiments 1 weekly contact hour, experiment reports 1 weekly contact hour Teaching methods: Practical laboratory experiments with reporting Learning methods: Review of the lab session, revision of the corrected lab reports, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Integrated subject knowledge and in-depth understanding of physical measurements and experimental setups, the documentation of experimental procedures, and the evaluation of measurement data, including error analysis.
Professional Competence: Skills and Knowledge Acquisition	Students possess a broad spectrum of specialized cognitive and practical skills. Knowledge acquisition through comprehensive application of concepts based on physics laboratory experiments.
Personal Competence: Social Competence	Define, reflect on, and evaluate objectives when conducting physics experiments, and independently and sustainably design corresponding learning and work processes, particularly based on experimental evaluations.

Personal Competence: Independence	Explain fundamental principles of physics, confirm them through laboratory experiments, and communicate them comprehensively. Develop solutions to physics problems in a group.
Competency Level According to the DQR	6
Contents	Experiments in the fields of classical mechanics, optics, thermodynamics, and atomic and nuclear physics, such as: • Measurement of gravitational acceleration (mathematical pendulum). • Harmonic, damped, and forced oscillations (Pohl's wheel). • Aerodynamics (Venturi tube, wind tunnel). • Imaging with a thin lens. • Spectral identification of elements using a prism spectrometer. • Diffraction at a grating. • Measurement of the speed of light. • Calorimetry. • Measurement of the specific charge of the electron (Helmholtz coil, filament beam tube). • Absorption of X-rays and measurement of Planck's constant. Learning Outcomes: • Familiarization with experimental methods through laboratory experiments. Qualification Objectives: • Designing, conducting, and evaluating physics experiments.
Recommendation for Accompanying Courses	Attendance at the accompanying courses "Engineering Mechanics 2" and "Materials Science" is strongly recommended; see the course schedule: https://splan.hs-heilbronn.de/
Other Special Notes	

Literature/Learning Resources	• P.A. Tipler. Tipler Physics: For Students of Science and Engineering. 9th updated edition. Spektrum Textbook. Springer Berlin / Heidelberg, 2024. • A. Knochel. Workbook for Tipler/Mosca, Physics: All Exercises and Questions with Solutions for the 8th Edition. Springer Berlin Heidelberg, 2019. • D. Halliday. Halliday Physics. 3rd updated edition. Wiley, 2017. • D. Halliday. Workbook for Halliday Physics: Solutions to the Exercises in the 3rd Edition. Wiley, 2017. • D. Meschede. Gerthsen Physics. 25th updated edition. Springer Textbook. Springer Berlin Heidelberg, 2015. • H. Stroppe. Stroppe PHYSICS: For Students of Natural Sciences and Engineering. 17th updated edition. Carl Hanser Verlag GmbH & Company KG, 2023. • H. Kuchling. Pocket Guide to Physics. 22nd updated edition. Carl Hanser Verlag GmbH & Company KG, 2022.
Schedule in the Course Catalog	Course Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Module G9 226040 External Accounting

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. rer. pol. Martin Tettenborn
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam format: Written
Course Content	External Accounting • Bookkeeping • Financial Reporting
Professional Competence: Knowledge and Understanding (Learning Objectives)	Upon successful completion of the module, students will be able to demonstrate knowledge and understanding • the content of external financial reporting, • explain the relationships between the individual components of external financial reporting (e.g., balance sheet, income statement, notes to the financial statements) as well as their significance and practical relevance in business practice. • They are able to understand the impact of business decisions on a company's financial position, cash flow, and profitability.
Professional Competence: Skills, Knowledge Acquisition	Students are able to apply commercial law regulations to annual financial statements, make correct journal entries, and prepare financial statements appropriately. They can independently familiarize themselves with new accounting regulations, apply them to real-world cases, and interpret the results in a well-founded manner.
Personal Competence: Social Competence	Students communicate complex accounting issues clearly and comprehensibly, present results in a manner tailored to the audience, and collaborate constructively in teams or project groups.

Personal Competence: Independence	Upon successful completion of the module, students will be able to apply, use, and generate knowledge • apply existing knowledge of external accounting in a targeted manner in various contexts, • apply theoretical knowledge of external accounting to practical issues in external accounting, • analyze complex problems in external accounting based on theoretical principles, • independently generate new knowledge from the material taught, • demonstrate the ability to adapt to change when dealing with dynamic challenges (e.g., changes in the value of an asset), • to verify the accuracy of data and content generated by artificial intelligence. <i>Communication and Cooperation</i> • to convey information from the field of accounting clearly, precisely, and in a manner appropriate to the target audience, • to present technical accounting concepts clearly and comprehensibly, both orally and in writing, • to persuasively present their arguments in interdisciplinary or intercultural discussions on specific accounting topics. • <i>Academic Self-Concept or Professionalism</i> • Develop a fundamental understanding of current and future-oriented topics in accounting, • to tackle professional challenges in a professional and responsible manner, • to critically review decisions made and adjust them as needed, • to actively support transformation processes in accounting in terms of content, methodology, and working practices.
Competency Level According to the DQR	6
Prerequisites for Participation	Prerequisite for participating in External Accounting: • Participation in the “Bookkeeping and Financial Reporting” lectures, as a joint exam (module exam) must be taken. • Knowledge of Business Administration corresponding to the scope of the “Fundamentals of Economics” module.
Special Features / Applicability	This module lays the technical foundation for acquiring business administration competencies in the advanced studies phase.
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Course Assessment for Combined Exam	

Course G9.1 226041 Accounting

This course is a required course in Module G9

Course Instructor	Dr. Tim Herberger
Semester	2
Frequency	Every semester
Course type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Bookkeeping
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide written exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Prerequisite for taking the Accounting course: - Enrollment in the Financial Reporting course, as this is a joint exam (module exam). - Knowledge of Business Administration (ABWL) equivalent to the scope of the ABWL course.
Teaching/Learning Methods (Instructional Formats)	Distribution of contact hours: Lecture 1 contact hour, Exercise 1 contact hour Teaching methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	
Professional competence: Skills and knowledge acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Content	Learning Outcomes: Qualification Objectives:

Recommendation for Accompanying Courses	Attendance at the accompanying course "Accounting" is strongly recommended, as students must take a joint exam (module exam); see the course schedule for the respective semester. Course Schedule: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course G9.2 226042 Accounting

This course is a required course in Module G9

Course Instructor	Dr. Tim Herberger
Semester	2
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Accounting
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide written exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Prerequisite for taking the Accounting course: - Enrollment in the Accounting course, since a joint exam (module exam) must be taken. - Knowledge of Business Administration (ABWL) equivalent to the scope of the ABWL course.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly course hours (SWS): Lecture 1 SWS, Seminar 1 SWS Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6

Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying Accounting lecture is strongly recommended, as a joint exam (module exam) must be taken; see the course schedule for the respective semester. Course Schedule: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Module G10 226045 Fundamentals of Social Sciences

Duration of the Module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Wolfgang Albrecht
Teaching, Learning, and Assessment Methods	Teaching format: Seminar, language didactics colloquium, lecture with integrated exercises Learning methods: Writing a term paper, practicing presentation techniques, reviewing lecture material, assignments on the ILIAS e-learning platform Examination Format: Submission of a written term paper, presentation of results, combined examination with a written exam as the final assessment
Course Content	Fundamentals of the Social Sciences • Ethics and Academic Work • Foreign Language • Communication in Business
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students receive foundational training in communication and social skills. They acquire integrated subject knowledge in the following areas: • Ethics and Academic Work • Foreign Language • Business Communication
Professional Competence: Skills and Knowledge Acquisition	Students possess the ability to present facts, ideas, and concepts from the courses listed above in an effective and persuasive manner, as well as to efficiently address objections while tailoring their arguments to their audience.
Personal Competence: Social Competence	Students can present complex, subject-specific problems from the areas mentioned above to group members and experts in a well-reasoned manner and tailor their presentation to the audience.
Personal Competence: Independence	Students are able to define, reflect on, and evaluate goals for learning and work processes for themselves and for work groups.
Competency Level According to the DQR	6
Prerequisites for Participation	None

Special Features / Applicability	This module lays the foundation for socially responsible behavior. Additional courses that can contribute to such behavior can be found in the Studium Generale program. https://www.hs-heilbronn.de/de/studiumgenerale Attendance is mandatory for all courses in this module. • Ethics and Academic Work • Foreign Language • Business Communication
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	Will be published during the first three weeks of the course

Course G10.1 226046 Ethics and Academic Work

This course is a required course in Module G10

Course Coordinator	Jörg Hübner
Semester	2
Frequency	Every semester
Type of Course	Seminar
Language of Instruction	German
Course Name (English)	Ethics and Scientific Work
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Preliminary assessment via presentation
Exam Duration	
Requirement	Required course
Prerequisites for Participation	Knowledge and understanding at the level required for university admission Attendance is mandatory.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Seminar 2 SWS Teaching methods: Lecture and individual guidance on the research paper Learning Methods: Writing a paper and giving a presentation in accordance with the guidelines for an academic paper, reviewing lecture material, and completing assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students explore selected approaches to business and corporate ethics as well as research ethics and learn how these can be applied in both corporate and academic contexts. Students master the proper preparation of academic documents as well as the methods of learning and working. They are familiar with strategies for gathering information from literature and other sources and know how to analyze this information effectively and purposefully and how to requirements.

Professional Competence: Skills and Knowledge Acquisition	Students are able to systematically analyze and discuss, in a practice-oriented manner, market-based competitive systems as well as issues related to effective ethics management. They are capable of critically reflecting on economic and business ethics issues, communicating in a value-conscious manner, and articulating results-oriented proposals through discourse. The content learned in the seminar, along with the term paper, enables students to conduct academic work and apply what they have learned to new topics.
Personal Competence: Social Competence	Students can assess and critically examine the impact of their own actions on their immediate environment (particularly in group and team work) as well as on society and the environment. They are able to reflect on their responsibility as individuals and as members of society in order to derive, in a values-conscious manner, the corresponding guidelines for their own actions and conduct.
Personal Competence: Independence	Students are able to reflect on their own actions in their personal environment and in their capacity as individual consumers, in order to derive appropriate guidelines for their own actions and behavior based on their values. By working through the course content and conducting literature reviews, students are able to independently submit a paper grounded in scientific principles.
Competency level according to the DQR	6
Content	Learning Outcomes: This course covers the fundamentals of economic and business ethics as well as research ethics. Learning Objectives: Students will be able to contextualize and evaluate moral considerations in research and in the market economy. They recognize dilemmas and contingent situations and apply ethical and scientific concepts to selected practical examples. They are proficient in writing academic texts.
Recommendation for Accompanying Courses	Participation in the accompanying language-teaching colloquium "Foreign Language" and in the accompanying course "Communication in Business" is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Important Information	• Full attendance at all mandatory class sessions is a prerequisite for successful completion of the course. • "Foreign Language" and "Business Communication" are recommended as accompanying courses to complete the module in one semester.

Literature/Learning Resources	• Homann, Karl / Lütge, Christoph (2005): Introduction to Business Ethics, Münster • Lit; Clausen, Andrea (2009): Fundamentals of Business Ethics: A Workbook, Tübingen / Basel • Michael S. Aßländer (2011): Handbook of Business Ethics, • Wilhelm Korff (ed.) (2nd ed. 2009): Handbook of Business Ethics; Berlin • Hans Küng (2010): Doing Business with Integrity; Munich • Corsten, M. and Corsten, H.: Step by Step to Your Bachelor's Thesis: Organizing, Researching, and Presenting Successfully, 2nd ed., Vahlen, 2022 • Ebster, C., 2022. Academic Writing for Economists and Social Scientists. 6th ed., UTB, 2022 • Kornmeier, M.: Academic Writing Made Easy, 5th ed., UTB, 2024 • Theisen, M. R.: Academic Writing, 19th ed., Vahlen, 2024
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course G10.2 226047 Foreign Language

This course is a required course in Module G10

Course Instructor	Dr. Melanie Gish
Semester	2
Frequency	Every semester
Course Type	Colloquium on Language Teaching
Language of Instruction	English
Course Title (English)	Foreign Language
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessed throughout the course via a combined exam, with a written exam as the final assessment
Exam Duration	90
Requirement	Required course
Prerequisites for participation	Knowledge and understanding at the level required for university admission
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Language Didactics Colloquium 2 SWS Teaching Methods: Language Didactics Colloquium with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students understand the key points of even more complex subject-specific texts and are able to comment on them, articulate their own position, and, if necessary, propose and present solutions. The relevant technical and business-related vocabulary is expanded and deepened accordingly.
Subject-Specific Competence: Skills and Knowledge Acquisition	Skills: Instrumental and methodological skills, assessment abilities, e.g., structuring, planning, executing, and appropriately organizing tasks and exercises.
Personal Competence: Social Competence	Skills: Instrumental and methodological skills, assessment abilities, e.g., structuring, planning, executing, and appropriately organizing tasks and exercises.
Personal Competence: Independence	Skills: Instrumental and methodological skills, assessment abilities, e.g., structuring, planning, executing, and appropriately organizing tasks and exercises.
Competency level according to the DQR	6

Content	Learning Outcomes: • Creating and editing standard business correspondence documents (e.g., inquiries, scheduling appointments) • Developing and practicing typical oral communication situations (introductions, small talk, phone calls, etc.) Describing organizational structures • Describing business developments using charts and graphs • Language Focus: Letter styles, technical and business language, subject-specific terminology, and idiomatic expressions • Intercultural communication and its importance; aspects of regional culture Learning Objectives: • English as a lingua franca • Maintaining business contacts both in writing and orally • Presentation techniques with consideration of intercultural aspects • Analysis and handling of case studies and problem scenarios, followed by reporting or developing solutions
Recommendation for accompanying courses	Participation in the accompanying seminar “Ethics and Academic Work” and in the course “Communication in Business” is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Important Information	Attendance is mandatory! Students have the option to take a foreign language other than English. To do so, the student must provide proof to the relevant examination committee that their English proficiency corresponds to level B1. If this proof cannot be provided, English must be taken as the foreign language. The other foreign language must have a workload of at least 2.5 ECTS and must be selected from the foreign language offerings at Heilbronn University. Ethics and Academic Writing, as well as Business Communication, are recommended as accompanying courses to complete the module in one semester.
Literature/Learning Resources	• Powell, M: In Company 3.0 — Intermediate, Upper Intermediate, Macmillan Education, 2014 • Butzpahl, G., & Maier-Fairclough, J.: Career Express B2, Cornelsen, 2010 • Gibson, R.: Intercultural Business Communication, Cornelsen & Oxford, Berlin, 2008 • Murphy, R.: English Grammar in Use: A Self-Study Reference and Practice Book for Intermediate Students of English, Cambridge Univ. Press; [Stuttgart]: Klett, 2010 • Powell, M.: In Company: Intermediate, Macmillan et al., Oxford, 2009 • English-language press reports

Schedule	Class schedule: https://splan.hs-heilbronn.de/
Assessment via combined exam	Will be posted in ILIAS in the corresponding course during the first three weeks of the semester

Course G10.3 226048 Communication in Business

This course is a required course in Module G10

Course Instructor	Prof. Dr.-Ing. Wolfgang Albrecht
Semester	
Frequency	Every semester
Type of Course	Lecture with integrated exercises
Language of instruction	German
Course Title (English)	Communication within the Company
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Preliminary assessment via project work
Exam Duration	0
Requirement	Required Course
Prerequisites for Participation	Knowledge and understanding at the level required for university admission
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: 0.3 lecture, 1.7 seminar Teaching methods: Workshop as a block course, (short) projects with specific tasks, group and individual training on communication behavior, academic communication through subject-specific presentations, feedback on group presentations and presentations, exercises in communicating effectively with specific audiences; learning methods: action- and experience-oriented learning projects, self-study and self-analysis, feedback sessions.
Subject-Specific Competence: Knowledge and Understanding	Students possess integrated subject knowledge in the following areas: • Team-building and team development processes • Communication styles • Rules of communication and feedback • Communication within and with groups • Communication with limited communication resources • Identifying information and communication gaps and bottlenecks

Professional Competence: Skills and Knowledge Acquisition	Students possess a broad range of specialized, cognitive, and practical skills in the following areas: • Designing goal- and audience-oriented communication • Identifying personality levels (self-assessment and external assessment) • Complex and challenging communication situations • Gathering and sharing information • Communication in an intercultural setting • Communication within a hierarchical system
Personal Competence: Social Competence	Students will be able to: • Plan and organize work and task processes cooperatively in diverse groups • Inform, guide, advise, and support team members • Take into account the interests and needs of different audiences • Structure complex tasks in an interdisciplinary manner • Present complex topics in a targeted and audience-specific manner • Effectively managing information and communication bottlenecks
Personal Competence: Independence	Students can reflect on, evaluate, independently pursue, and take responsibility for their own learning and work goals as well as those set by others. They can draw conclusions for the following work processes within a team: • Identifying and resolving complex (communication) tasks • Identifying and resolving conflict situations • Recognizing the need to give and seek feedback • Fostering cooperation and mutual support
Competency level according to the DQR	6
Contents	Learning Outcomes: Qualification Objectives: 1. Gaining experience with and practicing communication and social skills 2. Dealing with time pressure, constraints, and stress 3. Different personality types and their impact on communication 4. Team-oriented and goal-oriented behavior 5. Rules for giving feedback 6. The need for communication tailored to the audience 7. Dealing with communication and information bottlenecks
Recommendations for complementary courses	• Full in-person attendance at all mandatory class sessions is a prerequisite for successful completion of the course. • Courses on ethics and academic writing, as well as a foreign language course, are recommended as accompanying courses to complete the module in one semester.
Other Special Notes	

Literature/Learning Resources	• Schulz von Thun, Friedemann: Talking to One Another, Volumes 1–4: Disruptions and Clarifications / Styles, Values, and Personality Development / The “Inner Team” and Situation-Appropriate Communication / Questions and Answers; Rowohlt Taschenbuch, 2023 • Ternes, Doris: Communication—A Key Skill: An Introduction to Essential Areas of Interpersonal Communication; Junfermann Verlag, 2008 • Röhner, Jessica; Schütz, Astrid: Psychology of Communication (3rd ed.); Springer, 2020
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Advanced Studies

Module H1 226100 Electronics and Measurement Technology

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises and labs Learning format: Lecture and lab follow-up, assignments on the ILIAS e-learning platform Assessment: Written exam and lab reports
Course Content	Electronics and Measurement Technology • Electronic Components and Circuits • Measurement Technology • Measurement Technology Lab
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students have a broad and integrated understanding of: • Passive and active components and their electronic circuits • Fundamentals of measurement technology • Application of measurement technology through exemplary laboratory exercises
Professional Competence: Skills, Knowledge Acquisition	Students can: • Explain how passive and active components work • Design and build electronic circuits • Apply and evaluate methods of measurement technology
Personal Competence: Social Skills	Teamwork and the ability to work in a team are actively practiced through group work as part of exercises and laboratory experiments.
Personal Competence: Independence	Students are able to assess and evaluate fundamental engineering problems.
Competency level according to the DQR	6

Prerequisites for Participation	Prerequisite for taking the Electronics and Measurement Technology course: • Knowledge of the following modules or lectures is required. • Mathematics covering the content of the modules Mathematical Foundations 1 and 2, • Physics covering the content of the Physics lecture, and • Electrical Engineering to the extent covered in the module "Fundamentals of Electrical Engineering"
Special Features / Availability	This module, H1 Electronics and Measurement Technology, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, the H1 Electronics and Measurement Technology module is offered in the 3rd semester. If you begin your studies in the summer semester, the H1 Electronics and Measurement Technology module is offered in the 4th semester.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H1.1 226101 Electronic Components and Circuits

This course is a required course in Module H1

Course Instructor	Prof. Dr.-Ing. Ingo Kühne
Semester	3
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Title (English)	Electronic Components and Circuits
Credits (ECTS)	2.5
SWS	2
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	- Mathematics covering the content of the modules Mathematical Foundations 1 and 2. - Physics covering the content of the Physics lecture. - Electrical Engineering covering the content of the "Fundamentals of Electrical Engineering" module.
Teaching/Learning Methods (Instructional Formats)	Course Load: Lecture 1.8 SWS, Seminar 0.2 SWS Teaching Methods: Lecture with integrated exercises Learning methods: Review of lecture material, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Broad and integrated knowledge, including the scientific fundamentals and practical application in the fields of electronic components and their circuits.
Professional Competence: Skills and Knowledge Acquisition	Students possess a broad spectrum of specialized cognitive and practical skills. Knowledge acquisition through comprehensive application, particularly through practical exercises in the fields of electronic components and their circuits.

Personal Competence: Social Competence	- Justify and comprehensively communicate the fundamentals of electronic components and their circuits, as well as their practical applications . - Developing appropriate solutions to problems in a group.
Personal Competence: Independence	- Define, reflect on, and evaluate goals for learning and work processes when studying the fundamentals of electronic components and their circuits. - Independently and sustainably structure learning and work processes, particularly through practice exercises.
Competency level according to the DQR	6
Contents	Lecture content includes, among other things: - Fundamentals (materials and technologies of electronic components) - Passive components (resistors, inductors, capacitors) - Active components (diodes, transistors, FETs, operational amplifiers) - Circuits (high-pass, low-pass, and band-pass filters; operational amplifier circuits) Learning Outcomes: - Basic theoretical knowledge in the above-mentioned areas. - Modeling and simulation of electronic components and their circuits using LTspice. Qualification Objectives: - Understanding of how electronic components and their circuits function. - Practical design and application of simple electronic circuits.
Recommendation for accompanying courses	Attendance at the accompanying lecture on Measurement Technology and the accompanying lab on Measurement Technology is strongly recommended; see the course schedule: https://splan.hs-heilbronn.de/
Other Details	

Literature/Learning Resources	• U. Tietze. Semiconductor Circuit Design. 16th updated edition. Springer Berlin / Heidelberg, 2019. • H. Göbel. Introduction to Semiconductor Circuit Design. 6th updated edition. Springer Berlin / Heidelberg, 2019.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Course H1.2 226102 Measurement Technology

This course is a required course in Module H1

Course Instructor	Prof. Dr.-Ing. Marcus Stolz
Semester	3
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Measurement Technology
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Prerequisite for taking the Measurement Technology course: • Knowledge of the following modules or lectures is required. • Mathematics covering the content of the modules Mathematical Foundations 1 and 2, • Physics covering the content of the Physics lecture, and • Electrical Engineering to the extent covered in the module "Fundamentals of Electrical Engineering"
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours (SWS): Lecture 1 SWS, Exercise 1 SWS Teaching methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6

Content	Learning Outcomes: Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lecture “Electronic Components and Circuits” and the accompanying lab “Measurement Techniques” is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Details	
Literature/Learning Resources	
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course H1.3 226103 Measurement Technology Lab

This course is a required course in Module H1

Course Coordinator	Prof. Dr.-Ing. Marcus Stolz
Semester	3
Frequency	Winter semester
Course Type	Lab
Language of Instruction	German
Course Name (English)	Laboratory Measurement Technology
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Preliminary assessment through lab work
Exam Duration	
Requirement	Required course
Requirements for Participation	Prerequisite for participation in the Measurement Technology lab: • Knowledge of the following modules or lectures is required. • Mathematics covering the content of the modules Mathematical Foundations 1 and 2, • Physics covering the content of the Physics lecture, and • Electrical Engineering to the extent covered in the module "Fundamentals of Electrical Engineering"
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours (SWS): Laboratory experiments 1 SWS, experiment reports 1 SWS Teaching methods: Practical laboratory experiments with reporting Learning methods: Review of the lab session, revision of the corrected lab reports, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6

Contents	Learning Outcomes: Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lectures on Electronic Components and Circuits and Measurement Technology is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Details	
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module H2 226105 Computer-Aided Design

Duration of the Module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Martin Wäldele
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises and practical application of the material using CAD software Learning Format: Review of lecture material, assignments on the ILIAS e-learning platform, hands-on practice with the software Assessment Format: Written exam, creation of a design
Course Content	Computer-Aided Design • Design and • CAD
Professional Competence: Knowledge and Understanding (Learning Objectives)	
Professional Competence: Skills, Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency Level According to the DQR	6
Prerequisites for participation	
Special Features / Availability	This module, H2 Computer-Aided Design, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, the H2 Computer-Aided Design module is offered in the 3rd semester. If you begin your studies in the summer semester, the H2 Computer-Aided Design module is offered in the 4th semester.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H2.1 226106 Design

This course is a required course in Module H2

Course Coordinator	Prof. Dr.-Ing. Martin Wäldele
Semester	3
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Construction Design
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required course
Prerequisites for participation	
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 1 SWS, Seminar 1 SWS Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional competence: Skills and knowledge acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for accompanying courses	Participation in the accompanying CAD lab is strongly recommended; see the course schedule for the respective semester. Schedule: https://splan.hs-heilbronn.de/
Other Special Features	
Literature/Learning Resources	

Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course H2.2 226107 CAD

This course is a required course in Module H2

Course Instructor	Prof. Dr.-Ing. Robert Paspas
Semester	3
Frequency	Winter semester
Course Type	Lab
Language of Instruction	German
Course Name (English)	CAD System
Credits (ECTS)	2.5
Lectures and seminars	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on the Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessed throughout the course via a design project
Exam duration	
Requirement	Required course
Prerequisites for Participation	Attendance required
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lab 2 SWS Teaching Methods: Practical application of concepts covered in the "Design" lecture using CAD software Learning Methods: Review of lecture material, assignments on the ILIAS e-learning platform, hands-on practice with the software
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:

Recommendation for Accompanying Courses	Attendance at the accompanying lecture on Design is strongly recommended; see the course schedule for the respective semester. Course schedule: https://splan.hs-heilbronn.de/
Other Details	
Literature/Learning Resources	
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Module H3 226110 Manufacturing Technology and Automation

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Martin Wäldele
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises and lab work Learning Format: Review of lecture material, assignments on the ILIAS e-learning platform, drafting and revising lab reports Examination Format: Written exam and lab reports
Course Content	Manufacturing Technology and Automation • Manufacturing Techniques • Laboratory: Manufacturing Techniques • Fundamentals of Automation
Professional Competence: Knowledge and Understanding (Learning Objectives)	
Professional Competence: Skills, Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency Level According to the DQR	6
Prerequisites for participation	
Special Features / Availability	This module, H3 Manufacturing Technology and Automation, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, the H3 Manufacturing Technology and Automation module is offered in the 3rd semester. If you begin your studies in the summer semester, the H3 Manufacturing Technology and Automation module is offered in the 4th semester.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Course H3.1 226111 Manufacturing Technologies

This course is a required course in Module H3

Course Instructor	Prof. Dr.-Ing. Martin Wäldele
Semester	3
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Manufacturing Technology
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on the Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Conducted as part of the course via a written exam
Exam duration	60
Requirement	Required course
Prerequisites for participation	
Teaching/Learning Methods (Instructional Formats)	Lecture and seminar, 2 SWS Teaching methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: Qualification Objectives:
Recommendation for Accompanying Courses	Participation in the accompanying labs on manufacturing technology and fundamentals of automation is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/

Other Details	
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course H3.2 226112 Manufacturing Technologies Lab

This course is a required course in Module H3

Course Coordinator	Prof. Dr.-Ing. Martin Wäldele
Semester	3
Frequency	Winter semester
Course Type	Lab
Language of Instruction	German, English
Course Name (English)	Laboratory Manufacturing Techniques
Credits (ECTS)	2.5
Lectures and seminars	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Preliminary assessment through lab work
Exam Duration	
Requirement	Required course
Prerequisites for Participation	
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lab 2 SWS Teaching Methods: Practical laboratory experiments with record-keeping Learning Methods: Compiling and revising the corrected lab results
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lecture on Manufacturing Technologies and the accompanying lab on Fundamentals of Automation is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/

Other Special Notes	Attendance is mandatory.
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course H3.3 226113 Fundamentals of Automation

This course is a required course in Module H3

Course Director	Prof. Dr.-Ing. Ralf Gessler, Prof. Dr.-Ing. Marcus Stolz
Semester	3
Frequency of the course	Winter Semester
Type of Course	Lab
Language of Instruction	German
Course Name (English)	Fundamentals of Automation
Credits (ECTS)	2.5
SWS	2.5
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Knowledge and understanding at the level required for university admission
Teaching/Learning Methods (Instructional Formats)	• Lecture with exercises • Self-study • Follow-up to the lecture • Exercise assignments • Preparation for and follow-up on lab assignments
Subject-specific competence: Knowledge and understanding	Students • are familiar with the entire process involved in implementing automation projects. • can independently specify automation tasks using various standardized description formats. • can evaluate different hardware implementation options (in particular, electrical controls, pneumatic controls, electronic controls, and computer controls) for the implementation of automation tasks. • are familiar with the most important communication systems for networking computer-based control systems.
Professional Competence: Skills and Knowledge Acquisition	Students can • independently design simple electrical and pneumatic control systems through exercises. • test these using simulations.

Personal Competence: Social Competence	Students • work in groups to achieve results and document them. • take on responsibility within a team.
Personal Competence: Independence	Students • further explore the topics covered in the lecture on their own. • use complex technical equipment with foresight and diligence. • work independently and take personal responsibility.
Competency level according to the DQR	6
Contents	• Introduction to Automation Technology • Introduction • Sensors • Actuators • Control Technology • Control Technology • Trends
Recommendation for Accompanying Courses	• Attendance at the accompanying lecture on Manufacturing Technologies and the accompanying lab on Manufacturing Technologies is strongly recommended; see the course schedule for the respective semester. Course schedule: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	• Heinrich, B.; Linke, P.; Glöckler, M.: Fundamentals of Automation: Sensing – Control – Regulation. 3rd, revised and expanded edition, Springer Vieweg 2020. • Tapken, H.: PLC – Theory and Practice. Europa Lehrmittel, 8th edition, 2024
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Module H4 226115 Internal Accounting

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. rer. pol. Martin Tettenborn
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture review, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Internal Accounting Cost and Activity Accounting
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students are familiar with the theoretical foundations, terms, and methods of cost and activity accounting. They understand their functions in planning, managing, and controlling business processes, as well as their significance for internal corporate management.
Professional Competence: Skills, Knowledge Acquisition	Students are able to correctly apply cost and performance accounting methods, address operational problems using appropriate calculation and analysis tools, and present the results in a manner appropriate to the intended audience. They can independently acquire in-depth knowledge of current developments in internal accounting and critically reflect on them.
Personal Competence: Social Competence	Students communicate the results of cost and performance accounting clearly and comprehensibly, contribute constructively to teamwork, and present their arguments persuasively in professional discussions.
Personal Competence: Independence	Students tackle tasks on their own initiative, apply learned methods in a targeted manner, and independently develop solution strategies for business problems in internal accounting.
Competency Level According to the DQR	6
Prerequisites for Participation	Prerequisite for participating in the Internal Accounting module: Knowledge of accounting equivalent to the scope of the External Accounting module is required.

Special Features / Availability	This module, H4 Internal Accounting, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, the H4 Internal Accounting module is offered in the 3rd semester. If you begin your studies in the summer semester, the H4 Internal Accounting module is offered in the 4th semester. The module teaches the technical fundamentals and skills needed to engage in economic activity.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H4.1 226116 Cost and Performance Accounting

This course is a required course in Module H4

Course Instructor	Prof. Dr. rer. pol. Martin Tettenborn
Semester	3
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Title (English)	Cost and Performance Accounting
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Self-study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Prerequisite for taking the Cost and Performance Accounting course: Knowledge of accounting equivalent to the scope of the External Accounting module is required.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lecture 2 weekly contact hours, Seminar 2 weekly contact hours Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	- Explain the concepts, methods, and structures of internal accounting, - explain how key processes and systems within internal accounting function, - to explain the relationships between the individual components of internal accounting (e.g., cost-element, cost-center, and cost-object accounting) as well as their significance and practical relevance in business practice.

Professional Competence: Skills and Knowledge Acquisition	Skills Students are able to independently address practical problems in internal accounting, correctly apply calculation methods, and support decisions with well-founded business analyses. Knowledge Acquisition Students can apply the knowledge they have acquired to new business contexts, independently seek out in-depth information, and thoughtfully contextualize current issues in the field of internal accounting.
Personal Competence: Social Competence	Upon successful completion of the module, students are able to <i>demonstrate knowledge and understanding</i> • to explain concepts, methods, and structures of internal accounting, • explain how key processes and systems within management accounting function, • Explain the relationships between the individual components of internal accounting (e.g., cost-element, cost-center, and cost-object accounting), as well as their significance and practical relevance in business practice. <i>Application, Use, and Generation of Knowledge</i> • Apply existing knowledge of internal accounting in a targeted manner in various contexts, • apply theoretical knowledge of internal accounting to practical issues in internal accounting, • Analyze complex problems in internal accounting based on theoretical principles, • independently generate new knowledge from the material taught, • Demonstrate the ability to adapt to change when dealing with dynamic challenges, • successfully overcome the challenges of digital transformation, • to verify the accuracy of data and content generated by artificial intelligence. <i>Academic Self-Concept or Professionalism</i> • to develop a fundamental understanding of current and future topics in accounting, • to address professional challenges in a professional and responsible manner, • to critically review decisions made and adjust them as needed, • to actively support transformation processes in accounting in terms of content, methodology, and working practices.

Personal Competence: Independence	<i>Communication and Cooperation</i> • Convey information and issues related to accounting clearly, precisely, and in a manner appropriate to the target audience, • present technical accounting issues clearly and comprehensibly, both orally and in writing, • to present their arguments convincingly in interdisciplinary or intercultural discussions on specific accounting topics, • value different perspectives (e.g., different approaches) in dialogue.
Competency Level According to the DQR	6
Content	Learning Outcomes: • Fundamentals of cost and performance accounting (basic accounting concepts, functions of cost accounting, fundamentals of production and cost theory) • Subfields of cost accounting (cost-element accounting, cost-center accounting, cost-object accounting) • Structure of Cost and activity accounting (full-cost accounting, activity-based costing, forms of income statement analysis) • Cost information as a basis for decision-making Qualification Objectives: • Applying existing knowledge of internal accounting in a targeted manner in various contexts, • apply theoretical knowledge of internal accounting to practical issues in internal accounting, • analyze complex problems in internal accounting based on theoretical principles, • independently generate new knowledge from the material taught, • demonstrate the ability to adapt to change when dealing with dynamic challenges, • successfully overcome the challenges of digital transformation, • to verify the accuracy of data and content generated by artificial intelligence.
Recommendation for Accompanying Courses	
Other Special Features	

Literature/Learning Resources	Course notes • Wöhe, Günter; Döring, Ulrich; Brösel, Gerrit: Introduction to General Business Administration, Munich, Franz Vahlen Publishers, current edition • Friedl, Gunther; Hofmann, Christian; Pedell, Burkhard: Cost Accounting: A Decision-Oriented Introduction, Munich, Franz Vahlen Publishers, current edition • Coneneneberg, Adolf G.; Fischer, Thomas M.; Günther, Thomas: Cost Accounting and Cost Analysis, <i>Stuttgart, Schäffer Poeschel, current edition</i>
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Module H5 226120 Methods of Market Design

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of an individual assignment
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Rainald Kasprik
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	1. Definitions of "Marketing" 2. Product policy 3. Pricing policy 4. Communication policy 5. Distribution Policy 6. Categories of Marketing Management: Consumer Goods Marketing, Industrial Goods Marketing, Services Marketing
Professional Competence: Knowledge and Understanding (Learning Objectives)	You will become familiar with the approaches and models of sales-oriented business management (the marketing mix).
Professional Competence: Skills, Knowledge Acquisition	This module teaches you how to identify and evaluate market-related information.
Personal Competence: Social Competence	In the practical exercises, students strengthen their ability to engage in goal-oriented teamwork through group work.
Personal Competence: Independence	Students learn to evaluate medium- and short-term market-related actions in a situational context.
Competency Level According to the DQR	6
Prerequisites for Participation	Knowledge of business management functions within a company (module: Fundamentals of Economics) is required.
Special Features / Availability	This module, H5 Methods of Market Design, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, Module H5: Methods of Market Design is offered in the 3rd semester. If you begin your studies in the summer semester, Module H5: Methods of Market Design is offered in the 4th semester.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H5.1 226121 Marketing

This course is a required course in Module H5

Course Instructor	Prof. Dr. Rainald Kasprk
Semester	3
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Marketing
Credits (ECTS)	5.0
Lectures and seminars	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required course
Prerequisites for participation	Knowledge of business management functions within a company (module "Fundamentals of Economics") is required.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lecture 2 weekly contact hours, Seminar 2 weekly contact hours Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	Students learn about the advantages and limitations of sales-market-oriented business management and acquire the tools needed to design a company's product portfolio in a multi-product firm.
Professional Competence: Skills and Knowledge Acquisition	Students acquire the skills to identify "successful" and potentially successful products based on economic and market-related criteria. They can prioritize and evaluate measures related to product strategy, pricing strategy, communication strategy, and distribution strategy.
Personal Competence: Social Competence	In the practical sessions, students strengthen their ability to engage in goal-oriented teamwork through group work.
Personal Competence: Independence	Students are able to assess the prerequisites and potential applications of marketing tools.
Competency Level According to the DQR	6

Content	Learning Outcomes: • Marketing Approaches and Marketing Decisions • Topics in situational and causal analysis in product, pricing, communication, and distribution policies • Objectives for product, pricing, communication, and distribution policies • Actions to Achieve Objectives in Product, Pricing, Communication, and Distribution Policies • Typical forms of market development in consumer goods marketing, industrial goods marketing, and services marketing Learning Objectives: Classification, application, analysis, and evaluation of marketing tools.
Recommendations for complementary courses	
Other Special Features	
Literature/Learning Resources	Bruhn, M.: Marketing. Gabler, 2022 Meffert, H., et al.: Marketing, 13th edition. Gabler, 2019 Kotler, P., et al.: Marketing Management. Pearson Studium, 2017 Course materials and case studies in ILIAS.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module H6 226125 Technical Systems and Materials

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual components
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Teaching methods: Lecture with integrated exercises and labs Learning method: Review of lectures and lab sessions, assignments on the ILIAS e-learning platform, revision of corrected lab reports Assessment: Written exam and lab reports
Course Content	Technical Systems and Materials • Sensor Systems • Laboratory: Automation and PLC Systems • Materials Laboratory
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students will have broad, integrated, and practical knowledge of: • Sensor Principles and Systems • Practical applications in the field of automation and PLC systems • Practical applications of materials testing
Professional Competence: Skills, Knowledge Acquisition	Students can: • Explain how sensors work and develop application scenarios. • Apply and evaluate automation methods. • Apply and evaluate methods of materials testing.
Personal Competence: Social Skills	Teamwork and the ability to work in a team are actively practiced through group work as part of exercises and laboratory experiments.
Personal Competence: Independence	Students are able to assess and evaluate fundamental engineering and experimental problems in the fields of sensor systems, automation, and materials science.
Competency level according to the DQR	6

Prerequisites for Participation	Prerequisite for enrolling in “Technical Systems and Materials”: • Knowledge of the following modules or lectures is required. • Mathematics covering the content of the modules “Mathematical Foundations 1” and “Mathematical Foundations 2,” • Physics covering the content of the “Physics” lecture, and • Electrical Engineering to the extent covered in the “Fundamentals of Electrical Engineering” module • Materials Science to the extent covered in the module “Fundamentals of Engineering 2”
Special Features / Availability	This module, H6 Technical Systems and Materials, is offered on an annual basis, i.e., once a year or every two semesters. For students beginning their studies in the winter semester, the module H6 Technical Systems and Materials is offered in the 4th semester. For students beginning their studies in the summer semester, the module H6 Technical Systems and Materials is offered in the 3rd semester.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Course H6.1 226126 Sensor Systems

This course is a required course in Module H6

Course Coordinator	Prof. Dr.-Ing. Ingo Kühne
Semester	4
Frequency	Summer semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Sensor Systems
Credits (ECTS)	5.0
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required course
Prerequisites for participation	- Mathematics covering the content of the modules Mathematical Foundations 1 and 2. - Physics covering the content of the Physics lecture. - Electrical Engineering covering the content of the "Fundamentals of Electrical Engineering" module.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 1.8 SWS, Seminar 0.2 SWS Teaching methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Broad and integrated knowledge, including the scientific fundamentals and practical application in the field of sensor systems, as well as a critical understanding of the most important theories and methods.
Professional Competence: Skills and Knowledge Acquisition	Students possess a broad spectrum of specialized cognitive and practical skills. Knowledge acquisition through comprehensive application, particularly through exercises in the fields of sensor technology and sensor systems.
Personal Competence: Social Competence	- Justify and comprehensively communicate the fundamentals of sensors and sensor systems and their practical applications. - Developing appropriate solutions to problems in a group.

Personal Competence: Independence	- Define, reflect on, and evaluate goals for learning and work processes when studying the fundamentals of sensors and sensor systems. - Independently and sustainably structure learning and work processes, particularly through practice exercises.
Competency level according to the DQR	6
Course Content	Lecture content includes, among other things: - Introduction to sensor technology (manufacturing technologies) - Fundamentals of sensors (linearity, sensitivity, offset) - Temperature sensors - Inertial sensors - Pressure sensors - Mass Flow Sensors - Magnetic Sensors - Gas Sensors - Optical sensors - Ionizing Radiation Sensors - Applications of Sensors in Sensor Systems Learning Outcomes: - Basic theoretical knowledge in the above-mentioned areas. - Application of sensors through practical exercises (pioneer!NG@Home—portable electronics/measurement technology/sensor lab). Qualification Objectives: - Understanding of how sensors and sensor systems work. - Practical design and application of simple sensor solutions.
Recommendation for accompanying courses	Participation in the accompanying labs on Automation and PLC Systems as well as Materials is strongly recommended; see the course schedule: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	E. Hering. Sensors in Science and Technology—Principles of Operation and Applications. 3rd updated edition. Springer Vieweg, Wiesbaden, 2023. K. Reif. Sensors in Motor Vehicles (Bosch Automotive Technical Information). 3rd updated edition. Vieweg+Teubner Verlag, 2016 edition J. Fraden. Handbook of Modern Sensors—Physics, Designs, and Applications. 5th updated edition. Springer International Publishing Switzerland, 2015.
Schedule in the Course Catalog	Course Schedule: https://splan.hs-heilbronn.de/

Assessment via Combined Exam	
------------------------------	--

Course H6.2 226127 Automation and PLC Systems Lab

This course is a required course in Module H6

Course Coordinator	Prof. Dr.-Ing. Anke Ostertag
Semester	4
Frequency	Summer semester
Course Type	Lab
Language of Instruction	German, English
Course Name (English)	Laboratory Automation and PLC Systems
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Preliminary assessment through lab work
Exam Duration	
Requirement	Required course
Prerequisites for Participation	
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Laboratory experiments 1 weekly contact hour, experiment reports 1 weekly contact hour Teaching methods: Practical laboratory experiments with reporting Learning Methods: Review of the lab session, revision of corrected lab reports, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: Qualification Objectives:

Recommendation for Accompanying Courses	Attendance at the accompanying lecture “Sensor Systems” and the accompanying lab “Materials” is strongly recommended; see the course schedule for the respective semester. Class Schedule: https://splan.hs-heilbronn.de/
Other Important Information	Attendance is mandatory.
Literature/Learning Resources	
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course H6.3 226128 Materials Laboratory

This course is a required course in Module H6

Course Coordinator	Prof. Dr.-Ing. Martin Wäldele
Semester	4
Frequency	Summer semester
Course Type	Lab
Language of Instruction	German, English
Course Name (English)	Materials Laboratory
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Preliminary assessment through lab work
Exam Duration	
Requirement	Required course
Prerequisites for Participation	Prerequisite for participation in the Materials Laboratory: Knowledge of the Materials Science lecture is required
Teaching/Learning Methods (Instructional Formats)	Allocation of contact hours: Laboratory experiments 1 contact hour, experiment reports 1 contact hour Teaching methods: Practical laboratory experiments with reporting Learning methods: Review of the lab session, revision of corrected lab reports, assignments on the ILIAS e-learning platform
Subject-specific competence: Knowledge and understanding	
Professional competence: Skills and knowledge acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: Qualification Objectives:

Recommendation for Accompanying Courses	Attendance at the accompanying lecture "Sensor Systems" and the accompanying lab "Automation and PLC Systems" is strongly recommended; see the course schedule for the respective semester. Course schedule: https://splan.hs-heilbronn.de/
Other Details	Attendance is mandatory.
Literature/Learning Resources	
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module H7 226130 Investment and Finance

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. rer. pol. Martin Tettenborn
Teaching, Learning, and Assessment Methods	• Teaching format: Lecture with integrated exercises • Learning format: Lecture with exercises, practical examples, and case studies; lecture preparation and follow-up; assignments on the ILIAS e-learning platform • Exam format: Written exam, 120 min
Course Content	Investment and Financing • Investment and • Financing
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students are familiar with the static investment analysis methods still frequently used in practice. By collectively identifying the weaknesses of these methods, they are introduced to dynamic investment analysis methods. They learn to apply these concepts to practical business management problems. The increasingly important field of business valuation is covered in detail, particularly using the income approach. In the section on financing, students learn about the necessity of liquidity planning and management. They learn about the leverage effect, including its potential and limitations. They master the instrument of loan financing and understand bonds as a long-term financing instrument for capital-market-oriented companies. They learn about the most important forms of equity financing, particularly equity financing for corporations.
Professional Competence: Skills, Knowledge Acquisition	• Identifying the interrelationships between internal accounting and investment and financing calculations • Analyzing the interfaces between tax theory and financial management
Personal Competence: Social Competence	Listening, reasoning, motivating, and mutual knowledge sharing
Personal Competence: Independence	• Making independent decisions regarding financial management tasks • Discussing and evaluating solutions to financial management problems • Commenting on current topics in investment and financing analysis
Competency level according to the DQR	6

Prerequisites for participation	Prerequisite for participating in the Investment and Financing course: • Attendance at the "Investment and Financing" lectures, as a joint exam (module exam) must be taken. • Knowledge of accounting equivalent to the scope of the External Accounting module.
Special Features / Availability	This module, H7 Investment and Finance, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, Module H7 Investment and Finance is offered in the 4th semester. If you begin your studies in the summer semester, the H7 Investment and Finance module is offered in the 3rd semester. The module teaches the technical fundamentals and skills needed to engage in economic activity.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H7.1 226131 Investment

This course is a required course in Module H7

Course Instructor	Prof. Dr. rer. pol. Martin Tettenborn
Semester	4
Frequency	Summer semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Investment
Credits (ECTS)	2.5
Lectures and seminars	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide written exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Prerequisite for taking the Investment and Finance course: - Enrollment in the Finance course, since a joint exam (module exam) must be taken. - Knowledge of accounting equivalent to the scope of the External Accounting module.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lecture 1 weekly contact hour, Seminar 1 weekly contact hour Teaching methods: Lecture with integrated exercises Learning methods: Review of lecture material, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	Students understand the theoretical foundations, procedures, and objectives of investment analysis. They are familiar with static and dynamic methods for evaluating investment projects and can identify their areas of application and limitations.
Professional Competence: Skills and Knowledge Acquisition	Students are able to evaluate investment decisions using appropriate calculation methods, structure complex decision-making problems, and derive recommendations for action. They can apply their knowledge to new investment situations and independently acquire advanced analytical methods.
Personal Competence: Social Competence	Students can present the results of investment analyses clearly and in a manner appropriate to the audience, take different perspectives into account in group work, and participate constructively in interdisciplinary discussions.

Personal Competence: Independence	Students handle investment decisions on their own initiative, make well-founded judgments under conditions of uncertainty, and independently develop solutions to complex problems.
Competency Level According to the DQR	6
Content	Learning Outcomes: Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lecture on Finance is strongly recommended, as a joint exam (module exam) must be taken, See the course schedule for the respective semester. Course schedule: https://splan.hs-heilbronn.de/
Other Special Features	
Literature/Learning Resources	• Course Notes • Wöhe, Günter; Döring, Ulrich; Brösel, Gerrit: Introduction to General Business Administration. Munich, Franz Vahlen Publishers, current edition • Perridon, Louis; Steiner, Manfred; Rathgeber, Andreas: Corporate Finance. Munich, Franz Vahlen Publishers, current edition • Olfert, Klaus: Financing. Ludwigshafen, Kiehl Verlag, current edition
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course H7.2 226132 Finance

This course is a required course in Module H7

Course Instructor	Prof. Dr. rer. pol. Martin Tettenborn
Semester	4
Frequency	Summer semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Financing
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide written exam
Exam Duration	60
Requirement	Required course
Requirements for participation	Prerequisite for taking the Finance course: - Enrollment in the "Investment" course, since a joint exam (module exam) must be taken. - Knowledge of accounting equivalent to the scope of the External Accounting module.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lecture 1 weekly contact hour, Exercise 1 weekly contact hour Teaching methods: Lecture with integrated exercises Learning methods: Review of lecture material, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	Students are familiar with the fundamental tools, methods, and theories of corporate finance. They understand forms of financing, their objectives, and their impact on capital structure and corporate development.
Professional Competence: Skills and Knowledge Acquisition	Students are able to analyze financing alternatives, critically evaluate their advantages and disadvantages, and derive appropriate financing decisions. They can independently familiarize themselves with new financing instruments and markets and assess their relevance.
Personal Competence: Social Competence	Students communicate financial issues precisely and clearly, present their findings persuasively in group discussions, and work cooperatively in teams. Furthermore, they learn to contextualize current economic news as it relates to corporate financing.

Personal Competence: Independence	Students can independently prepare financing decisions within the context of case studies and thoughtfully weigh alternatives.
Competency Level According to the DQR	6
Content	Learning Outcomes: Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lecture on Investment is strongly recommended, as a joint exam (module exam) must be taken; see the course schedule for the respective semester. Course Schedule: https://splan.hs-heilbronn.de/
Other Details	
Literature/Learning Resources	• Course Notes • Wöhe, Günter; Döring, Ulrich; Brösel, Gerrit: Introduction to General Business Administration. Munich, Franz Vahlen Publishers, current edition • Perridon, Louis; Steiner, Manfred; Rathgeber, Andreas: Corporate Finance. Munich, Franz Vahlen Publishers, current edition • Olfert, Klaus: Financing. Ludwigshafen, Kiehl Verlag, current edition
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Module H8 226135 Production Management

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credit Hours (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the courses (submodules) will only be awarded if the required examination has been successfully completed.
Responsible	Prof. Dr.-Ing. Wolfgang Ernst
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Production Management Production Management 1
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students learn to understand, evaluate, and design operational processes and their context. This includes teaching the most important theories, principles, and methods of operational organization and production planning.
Professional Competence: Skills, Knowledge Acquisition	
Personal Competence: Social Competence	Students are able to present well-reasoned arguments regarding complex subject-specific problems and solutions to experts and to further develop these solutions in collaboration with them.
Personal Competence: Independence	Upon successful completion of this module, students can define goals for their personal learning and work processes. They independently reflect on and evaluate their learning and work processes and shape them in a sustainable manner.
Competency level according to the DQR	5–6
Prerequisites for Participation	To successfully complete the Production Management module, students must have knowledge of general business administration equivalent to the scope of the Fundamentals of Economics module.
Special Features / Availability	This module, H8 Production Management, is offered on an annual basis, i.e., once a year or every two semesters. It is typically held during the winter semester. If you begin your studies in the winter semester, the H8 Production Management module is offered in the 4th semester. If you begin your studies in the summer semester, the H8 Production Management module is offered in the 3rd semester.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H8.1 226136 Production Management 1

This course is a required course in Module H8

Course Coordinator	Prof. Dr.-Ing. Wolfgang Ernst
Semester	4
Frequency	Winter semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Production Management 1
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	To successfully complete the Production Management module, students must have knowledge of general business administration equivalent to the content covered in the Fundamentals of Economics module.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lectures with discussions: 3 weekly contact hours; exercises in individual and group work: 1 weekly contact hour Teaching Methods: Lectures delivered by the instructor. The exercises are presented by the students and, if necessary, supplemented or corrected by the instructor. Learning Methods: Preparation for and follow-up on lectures; exercises on the ILIAS e-learning platform; exercises must be prepared independently, either individually or in self-organized small groups; independent study of the literature.
Subject-Specific Competence: Knowledge and Understanding	Upon successful completion of this course, students will have a broad and integrated understanding of the methodological approach to the operational design of a manufacturing organization, with particular emphasis on the reliability of production systems. Students will have a critical understanding of the most important theories, principles, and methods of plant organization and production planning.

Professional Competence: Skills and Knowledge Acquisition	Upon completion of this course, students will have a very broad range of methods and theories in the areas of product development, product documentation, production planning, production control, and production optimization. They can plan cross-functional workflows and evaluate them by considering alternative courses of action and interactions with related areas (e.g., quality management). They can apply the necessary transfer skills. To meet the frequently changing demands of professional practice, they are able to develop new solutions appropriate to the situation and evaluate them according to different criteria.
Personal Competence: Social Competence	Students are able to present complex interdisciplinary topics in a structured, goal-oriented, and audience-specific manner. They are able to proactively take into account the interests and information needs of their audience, as well as potential problems. In specialized teams, they can responsibly represent the fields of product development, production planning, and production optimization. In teams with experts from other fields, they can effectively advocate for and further develop these areas.
Personal Competence: Independence	Students can independently set, pursue, and take responsibility for their own learning and work goals. They have learned the consequences their work behavior has for themselves personally and for the student community.
Competency Level According to the DQR	5–6
Content	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives: Upon successful completion of this course, students will have a broad and integrated understanding of the methodological approach to product and process design. They will be able to identify the associated tasks of product documentation and production preparation (work planning and control) and clarify the relationships between them. Outline: 1. Introduction, Companies, and Terminology 2. Organizational Structure 3. Operational Organization 4. Business Unit Planning and Development 5. Product Documentation 6. Production Preparation - Overview 7. Production Planning 8. Production Control 9. Production Optimization (TPS, etc.)

Recommendations for Related Courses	Take an SAP course concurrently
Other Special Features	Field trips based on student interest and involvement in the organization
Literature/Learning Resources	• Bühner, R.: Business Administration and Organizational Theory, Munich: Oldenbourg Wissenschaftsverlag, latest edition • Eversheim, W.: Organization in Production Engineering. 4 volumes: Fundamentals, Design, Work Planning, Manufacturing, and Assembly, Berlin, Heidelberg: Springer Verlag, latest edition • Kummer, S. (ed.); Grün, O.; Jammerneegg, W.: Fundamentals of Procurement, Production, and Logistics, Munich: Pearson Studium Verlag, latest edition • Slack, N.; Brandon-Jones, A., Burgess, N.: Operations Management, Munich: Pearson Studium Verlag, latest edition • Wiendahl, H.-P.; Wiendahl, H.-H.: Operations Management for Engineers, Munich/Vienna: Hanser Verlag, latest edition • Thonemann, U.: Operations Management, Munich: Pearson Studium Verlag, latest edition • Will, T.: Production Management 4.0. In: Erner, M. (ed.): Management 4.0 – Business Management in the Digital Age. Berlin, Heidelberg: Springer Verlag, latest edition • Vahrenkamp, R.: Production Management, Munich: Oldenbourg Wissenschaftsverlag, latest edition • Neumann, K.: Production and Operations Management, Berlin, Heidelberg: Springer Verlag, latest edition • Bauernhansl, T.; ten Hompel, M.; Vogel-Heuser, B.: Industry 4.0 in Production, Automation, and Logistics, Wiesbaden: Springer Vieweg Verlag, latest edition • Tempelmeier, H.: Supply Chain Management and Production, Norderstedt: BoD Verlag, latest edition • Reese, J.: Operations Management, Munich: Verlag Franz Vahlen, latest edition • Bauernhansl, T.; ten Hompel, M.; Vogel-Heuser, B.: Handbook of Industry 4.0, Volumes 1–4, Wiesbaden: Springer Vieweg Verlag, latest edition • Roth, A. (Ed.): Introduction to and Implementation of Industry 4.0, Berlin, Heidelberg: Springer Gabler Verlag, latest edition • Westkämper, E.; Spath, D.; Constantinescu, C.; Lentjes, J.: Digital Production, Berlin, Heidelberg: Springer Verlag, latest edition • VDI Guideline VDI 4499, Digital Factory, Fundamentals, Sheet 1, Düsseldorf: VDI-Verlag, latest edition • Up-to-date literature from print and online media • Course materials
Schedule in the course timetable	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Module H9 226140 Analysis of Empirical Data

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Andreas Heinz
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	See course description
Subject-Specific Competence: Knowledge and Understanding (Learning Objectives)	See course description
Professional Competence: Skills, Knowledge Acquisition	See course description
Personal Competence: Social Competence	
Personal Competence: Independence	See course description
Competency level according to the DQR	6
Prerequisites for participation	Prerequisite for participating in the analysis of empirical data: Knowledge of mathematics equivalent to the modules Mathematical Foundations 1 and Mathematical Foundations 2.
Special Features / Availability	
Scheduling in the course catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course H9.1 226141 Statistics

This course is a required course in Module H9

Course Instructor	Prof. Dr. Andreas Heinz
Semester	4
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Statistics
Credits (ECTS)	5.0
Lectures and seminars	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Prerequisite for taking Statistics: Knowledge of mathematics equivalent to the modules Mathematical Foundations 1 and Mathematical Foundations 2.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly hours: Lecture 3 weekly hours, Exercise 1 weekly hour Teaching methods: Lecture with integrated exercises Learning methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students acquire fundamental knowledge of descriptive statistics and probability theory as well as inferential statistics, and are able to apply this knowledge to practical problems. They can calculate and interpret key statistical measures and examine relationships between various statistical characteristics for significance and relevance. Students become familiar with the methods of inductive statistics and acquire the skill to apply estimation and testing methods and interpret their results.

Professional Competence: Skills and Knowledge Acquisition	Students are able to analyze and apply statistical models to topics in engineering and economics.
Personal Competence: Social Competence	Students can independently form study groups and work on assignments together.
Personal Competence: Independence	Students are able to work on tasks independently.
Competency level according to the DQR	6
Content	Learning Outcomes: • Descriptive statistics (frequency distributions and their parameters, measures of central tendency, correlation and regression analysis, time series analysis, ratios and indices) • Probability and Statistics (probabilities, combinatorics, random variables, distributions) • Inferential Statistics (samples, estimation methods, hypothesis testing) Qualification Objectives: Identifying, systematizing, and independently applying and evaluating mathematical methods for modeling engineering and business phenomena.
Recommendation for accompanying courses	
Other Special Features	
Literature/Learning Resources	Lecture notes • Exercise materials • Schira, J.: Statistical Methods in Economics and Business Administration, Pearson • Schwarze, J.: Fundamentals of Statistics I-II, nwb
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Module H10 226145 Project Competence and Rhetoric

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.5
Requirements for Awarding Course Credits	The number of credits specified for the submodules will be awarded only if the required examination has been successfully completed.
Responsible	Prof. Dr. Gertraud Peinel
Teaching, Learning, and Assessment Methods	Teaching methods: Lecture with integrated exercises, practical application of rhetorical tools, and planning, organizing, and conducting field trips Learning methods: Lecture follow-up, assignments on the ILIAS e-learning platform, practical exercises in workshops and seminars. Assessment Methods: Written exams and presentations.
Course Content	Project Management and Rhetoric • Project Management • Public Speaking and Presentation Skills • Practical business studies
Subject-Specific Competence: Knowledge and Understanding (Learning Objectives)	1. H10.1: Students are familiar with the tools and methods of project management. They understand the requirements for project managers and project team members and can describe them. They are able to independently plan a project using PSP and Gantt chart techniques, as well as select and implement creativity techniques for brainstorming in a group. 2. H10.2: 3. H10.3: Upon successful completion of this course, students have the theoretical knowledge acquired in the courses "Production Management I" and "Production Management II." To this end, they have independently organized and carried out various visits to companies. Through this, they gain knowledge for the further development of theoretical production management methods in their professional field. Their knowledge and understanding at the interfaces with other areas is rounded out.

Professional Competence: Skills, Knowledge Acquisition	1. H10.1: Students can independently select and apply project management methods. They are able to plan a project independently using PSP and Gantt chart techniques, as well as utilize agile methods, while critically evaluating both agile and traditional approaches. They learn to select and implement creativity techniques for generating ideas in a group. 2. H10.2: 3. H10.3: Building on the broad spectrum of methods that students have learned in the courses Production Management I and II, students will, upon successful completion of this course, also possess the skills to apply these methods in practice. Because the course topic changes each semester, students must familiarize themselves with the respective professional field.
Personal Competence: Social Competence	They acquire social competence through teamwork and by practicing communication with other students, as well as through collaborative teamwork to organize and conduct company visits Collaboration within small groups, with the company, between small groups, and with the coordinator is central to the social skills to be developed in submodule H10.3. Students learn to proactively address problems within the team.
Personal Competence: Independence	H10.1: Students learn to independently solve assigned tasks related to project planning and brainstorming and to critically discuss different outcomes. H10.2: They learn to critically evaluate and improve their own communication skills. Students' independence is required and fostered in H10.3 through their free choice of the company to approach. Within the broad framework of the semester's theme, students must independently and sustainably within the broad framework of the semester's theme. This also includes independence in terms of time management.
Competency level according to the DQR	6
Prerequisites for Participation	Prerequisite for participating in "Project Competence and Rhetoric": - Enrollment in the courses "Rhetoric and Presentation Techniques" and "Practical Business Studies," as a joint exam (module exam) must be taken. - Knowledge of Business Administration (ABWL) equivalent to the "Fundamentals of Economics" module.

Special Features / Availability	This module, H10 Project Competence and Rhetoric, is offered on an annual basis, i.e., once a year or every two semesters. If you begin your studies in the winter semester, Module H10 Project Competence and Rhetoric is offered in the 4th semester. If you begin your studies in the summer semester, the module H10 Project Competence and Rhetoric is offered in the 3rd semester.
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H10.1 226146 Project Management

This course is a required course in Module H10

Course Instructor	Prof. Dr. Gertraud Peinel
Semester	4
Frequency	Summer semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Project Management
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required Course
Prerequisites for Participation	Prerequisite for taking the Project Management course: Knowledge of Business Administration equivalent to the "Fundamentals of Economics" module
Teaching/Learning Methods (Instructional Formats)	Weekly Hours: Lecture 1.5 hours, Seminar 0.5 hours Teaching Format: Lecture with integrated exercises Learning format: Practical project planning work, presentation of results
Subject-Specific Competence: Knowledge and Understanding	Students are familiar with the tools and methods of project management. They are familiar with the requirements for project managers and project team members and can describe them. They are able to independently plan a project using PSP and Gantt chart techniques, as well as select and implement creativity techniques for brainstorming in a group.
Professional Competence: Skills and Knowledge Acquisition	Students can independently select and apply project management methods. They are able to independently plan a project using PSP and Gantt chart techniques, as well as to use agile methods while critically evaluating both agile and traditional approaches. They learn to select and implement creativity techniques for generating ideas in a group.

Personal Competence: Social Competence	Students develop teamwork skills by forming small groups to carry out project collaboration and project management tasks. In particular, they learn about communication and leadership challenges in projects and begin to critically evaluate their own competence in these areas.
Personal Competence: Independence	Students learn to independently solve assigned tasks related to project planning and idea generation and to critically discuss different outcomes.
Competency Level According to the DQR	6
Content	Learning Outcomes and Qualification Goals: Students understand the preparation, planning, and implementation of projects and are able to participate effectively in projects.
Recommendation for Accompanying Courses	Participation in the accompanying courses “Rhetoric and Presentation Techniques” and “Practical Business Studies” is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Details	
Literature/Learning Resources	• Jakoby, W.: Project Management for Engineers. Vol. 217. Springer Fachmedien Wiesbaden, 2015 • Burghardt, M.: Project Management: A Guide to Planning, Monitoring, and Controlling Projects. John Wiley & Sons, 2018. • Kuster, J., Bachmann, C.: Handbook of Project Management: Agile – Classical – Hybrid, # Springer Gabler; 5th, completely revised and expanded edition, 2022
Schedule in the Course Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course H10.2 226147 Rhetoric and Presentation Techniques

This course is a required course in Module H10

Course Instructor	Stefan Mayer, B.S. in Business Administration (FH)
Semester	4
Frequency	Summer semester
Course Type	Seminar
Language of Instruction	German
Course Title (English)	Rhetoric and Presentation Skills
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide via presentation
Exam Duration	
Requirement	Required course
Prerequisites for Participation	Prerequisite for participating in Rhetoric and Presentation Techniques: • Prior registration for the corresponding course in ILIAS <u>and</u> • Participation in the introductory session
Teaching/Learning Methods (Instructional Formats)	Time allocation: 2 SWS of exercises Teaching format: Lecture with integrated exercises, practical application of rhetorical tools, workshop, coaching sessions with the instructor, video analysis Learning formats: Lecture follow-up, preparation for and follow-up on exercises, training, self-study, presentations (e.g., short, impromptu, or prepared presentations), assignments on the ILIAS e-learning platform, reading assigned literature.
Subject-Specific Competence: Knowledge and Understanding	Students possess integrated and in-depth theoretical knowledge regarding: • the different levels of communication • the relationship between presentation structure and audience attention • the necessity of presenting in a listener-oriented manner • the proper use of effective argumentation techniques

Professional Competence: Skills and Knowledge Acquisition	Students possess a broad range of cognitive and practical skills that enable them to: • use body language effectively • shape audience attention through presentation techniques • utilize the interplay of body, breathing, and voice • employ the appropriate techniques of speech delivery and style • argue effectively and neutralize unfair attacks • To persuade rhetorically in front of an audience and in small groups • Effectively optimize your own performance • to express oneself confidently and persuasively
Personal Competence: Social Competence	Students can present complex subject-specific problems and solutions to a specialized audience and defend them with sound arguments. They are skilled at handling problematic listeners and difficult conversation partners.
Personal Competence: Independence	Students are able to: • adapt their own presentation style to suit the audience • to determine the appropriate use of media, aids, and visual aids based on the situation • to speak, argue, and present in a natural, audience-oriented, and message-centered manner
Competency level according to the DQR	6
Contents	Learning Outcomes: • Aspects of communication and information transfer • Speech and presentation structure • Etiquette and Handling Critical Situations • Presentation preparation • Free-form and media-supported presentations • Use of Aids • Handling Critical Situations Learning Objectives: Students will be able to create, design, and deliver a speech and a presentation in accordance with the rules of effective communication and information delivery. They are proficient in the effective use of media and aids. They can handle critical speech and presentation situations. Students are able to plan and reflect on their preparation.
Recommendation for Accompanying Courses	Attendance at the accompanying lecture "Practical Business Studies" is strongly recommended, as a joint exam (presentation) must be completed; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Details	

Literature/Learning Resources	• Scheler, Uwe: Lecture Slides and Presentation Materials: Planning - Design - Produce; Vienna, latest edition • Hierhold, Emil: Presenting with Confidence—Delivering More Effectively; 5th updated edition, Vienna/Frankfurt 2000 • Matschnig, Monika: Body Language; Munich 2007
Scheduling in the Course Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course H10.3 226148 Practical Business Studies

This course is a required course in Module H10

Course Instructor	Prof. Dr.-Ing. Wolfgang Ernst
Semester	4
Frequency	Summer semester
Course Type	Seminar
Language of Instruction	German
Course Title (English)	Practical Business Studies
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours. The submodule consists of two preliminary meetings, several visits to companies or by companies to the university, and a final session.
Exam Type	Course-wide assessment via presentation
Exam Duration	
Requirement	Required course
Prerequisites for Participation	It is recommended that students take (if necessary, beforehand) the courses Production Management I and Production Management II.
Teaching/Learning Methods (Instructional Formats)	Weekly Hours (SWS): Seminar 1 SWS, Lab 1 SWS Teaching format: Planning, organizing, and conducting field trips Learning format: Review of lecture material, practical exercises in the seminar. The course is conducted in a seminar format. Students are guided to independently contact a company of their choice in small groups and organize a visit related to a given semester topic. During the visit to the company, they will present the university, the submodule's format, and the company to company representatives and fellow students. The final event is structured as a joint exam (presentation) with the course "Rhetoric and Presentation Techniques." It summarizes the visits and establishes connections to the other modules and courses.

Professional Competence: Knowledge and Understanding	Upon successful completion of this course, students will have applied the theoretical knowledge acquired in the courses "Production Management I" and "Production Management II" in a practical context . To this end, they have independently organized and conducted various visits to companies. As a result, they gain the knowledge needed to further develop the theoretical methods of production management in their professional field. Their knowledge and understanding at the interfaces with other areas are rounded out.
Professional Competence: Skills and Knowledge Acquisition	Building on the broad spectrum of methods students were introduced to in the "Production Management I" and "Production Management II" courses, upon successful completion of this course they will also possess the skills to apply these methods in practice. Because the course topic changes each semester, students must familiarize themselves with the respective professional field. In addition, they must select a company on their own, understand its processes, and present their findings to their fellow students. This presentation takes place in the presence of company representatives, which significantly challenges their ability to acquire knowledge.
Personal Competence: Social Competence	Collaboration within small groups, with the company, between small groups, and with the coordinator is central to the social skills to be developed in this submodule. Students learn to proactively address problems within the team.
Personal Competence: Independence	Students' independence is both required and fostered through their free choice of which company to approach. Within the broad framework of the semester's theme, students must independently and sustainably structure their work process. This also includes independence in terms of time management.
Competency Level According to the DQR	6

Content	Learning Outcomes: Upon successful completion of this course, students will have applied the theoretical knowledge acquired in the courses "Production Management 1" and "Production Management 2" in a practical context . To this end, they have independently organized and conducted various visits to companies. As a result, they gain knowledge for further developing the theoretical methods of production management in their professional field. Their knowledge and understanding at the interfaces with other areas are rounded out. Qualification Objectives: 1. Introduction and assignment of the semester topic 2. Various self-organized company visits 3. The final event is structured as a joint exam (presentation) with the course "Rhetoric and Presentation Techniques." It summarizes the visits and establishes connections to the other modules or courses.
Recommendation for Accompanying Courses	Attendance in the accompanying course "Rhetoric and Presentation Techniques" is strongly recommended, as the final assessment must be completed as a joint exam (presentation). See the course schedule for the respective semester. Course schedule: https:// splan.hs-heilbronn.de/
Other Special Features	The seminar is typically conducted in collaboration with local companies.
Literature/Learning Resources	See the courses Production Management I and II
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Module P 226150 Practical Study Semester

Duration of the module	1 semester
SWS	0
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	30.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed. Requirements for recognition of the Practical Study Semester (P 225130): • Passing the Bachelor's preliminary examination (undergraduate studies) and • completion of the pre- and post-colloquium for the practical semester
Responsible	Prof. Dr. Gertraud Peinel
Teaching, Learning, and Assessment Methods	Teaching method: Understanding and implementing guided tasks in companies, followed by independent work Learning method: Learning through work in companies Assessment: Presentation; writing a report following the guidelines for an academic paper
Course Content	Practical Study Semester • Pre- and post-colloquium • Deepening and applying the knowledge gained during the degree program • Practical insights and experiences in the workplace
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students learn to familiarize themselves with new areas of work within the company and to apply knowledge from their studies in a practical setting.
Professional Competence: Skills, Knowledge Acquisition	By working on projects as independently and autonomously as possible under real-world business conditions, students gain their first professional experiences. Students learn to familiarize themselves with their new area of work within the company. This includes, in particular, economic, technical, and environmental aspects, as well as—in many cases—safety and ethical considerations.
Personal Competence: Social Skills	Students learn how to interact with colleagues, supervisors, and customers within the company.
Personal Competence: Independence	Students learn to familiarize themselves with new subject areas in a real-world company, to integrate into existing organizational structures, and to assess their position and work performance in comparison to others.
Competency Level According to the DQR	6

Prerequisites for Participation	Prerequisites for enrolling in the Practical Study Semester (P.1 225131): • Passed the Bachelor's preliminary exam (undergraduate studies) and • Completion of the preliminary colloquium for the practical semester
Special Features / Availability	The internship colloquium consists of a preparatory (pre-colloquium) and a follow-up (post-colloquium) session. In the follow-up session, students give a presentation reporting on their experiences during the practical semester. The preliminary colloquium must be completed no later than the semester preceding the practical semester. The follow-up colloquium must be completed in the semester following the internship semester.
Scheduling in the Course Catalog	The preliminary colloquium is scheduled for the 4th semester, and the follow-up colloquium is scheduled for the 6th semester; they can be found in the course schedule at: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course P.1 226151 Practical Study Semester and Colloquium

This course is a required course in Module P

Course Coordinator	Prof. Dr. Gertraud Peinel
Semester	5
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German, English
Course Name (English)	Internship Semester and Colloquium
Credits (ECTS)	30.0
SWS	0
Workload - Contact Hours	
Workload - Self-study	750
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide
Exam Duration	
Requirement	Required course
Prerequisites for Participation	Requirements for entering the internship semester • Successful completion of the foundational studies (semesters 1 and 2) and • Participation in the preliminary colloquium.
Teaching/Learning Methods (Instructional Formats)	Teaching format: Understanding and carrying out guided tasks in companies, followed by independent work Learning format: Learning through work in companies
Professional Competence: Knowledge and Understanding	Students learn to familiarize themselves with new areas of work within a company and to apply course content.
Professional Competence: Skills and Knowledge Acquisition	By participating in projects as independently and autonomously as possible under real-world business conditions, students gain their first professional experiences. Students learn to adapt to a new area of work within a company. This includes, in particular, economic, technical, and environmental aspects, and often also safety-related and ethical aspects.
Personal Competence: Social Skills	Within the company, students learn how to interact with colleagues and supervisors, as well as with customers and suppliers.
Personal Competence: Independence	Students learn to familiarize themselves with new subject areas in a real-world company, to integrate into existing organizational structures, and to assess their position and work performance in comparison to others.

Competency Level According to the DQR	6
Content	Learning Outcomes: (formerly Learning Objectives) Understanding daily work in a company; understanding issues in business processes. Qualification Objectives: Students have gained an understanding of day-to-day work in a company; they are familiar with processes and procedures and have learned key terms and practices used in the workplace. They have improved their English skills and practiced interacting with coworkers, supervisors, customers, and suppliers.
Recommendation for Companion Courses	
Other Special Features	
Literature/Learning Resources	None
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module H11 226155 Control and Regulation Technology

Duration of the module	1 semester
SWS	6
Exam Type	The module exam consists of weighted individual components
Credits (ECTS)	7.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Teaching methods: Lecture with integrated exercises and labs Learning method: Review of lectures and lab sessions, assignments on the ILIAS e-learning platform, revision of corrected lab reports Assessment: Written exam and lab reports
Course Content	Control and Regulation Technology: - Control Engineering, - Control Theory, and - Laboratory Applications
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students will have a broad and integrated understanding of: the theory of control and regulation engineering and its practical applications.
Professional Competence: Skills, Knowledge Acquisition	Students are able to: - Develop and evaluate concepts in control engineering. - Experimentally implement concepts of control and regulation technology.
Personal Competence: Social Competence	Teamwork and the ability to work in a team are actively practiced through group work in the context of exercises and laboratory experiments.
Personal Competence: Independence	Students are able to assess and evaluate fundamental engineering problems in the field of control and regulation technology.
Competency level according to the DQR	6

Prerequisites for Participation	Prerequisite for taking the Control and Regulation Technology course: • Knowledge of mathematics equivalent to the modules “Mathematical Foundations 1” and “Mathematical Foundations 2,” knowledge of electrical engineering equivalent to the module “Fundamentals of Electrical Engineering,” and knowledge of physics equivalent to the “Physics” lecture. • Knowledge of measurement technology equivalent to the scope of the Electronics and Measurement Technology module. • Knowledge of sensor systems equivalent to the content of the “Technical Systems” module.
Special Notes / Availability	
Scheduling in the Course Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H11.1 226156 Control Engineering

This course is a required course in Module H11

Course Coordinator	Prof. Dr.-Ing. Mohamed Ibrahim
Semester	6
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Control Technology
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide written exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Prerequisite for taking Control Engineering: - Enrollment in the Control Systems lecture, since a joint exam (module exam) must be taken. - Knowledge of mathematics equivalent to the modules Mathematical Foundations 1 and Mathematical Foundations 2, as well as knowledge of electrical engineering equivalent to the module Fundamentals of Electrical Engineering.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lecture 1 weekly contact hour, Exercise 1 weekly contact hour Teaching methods: Lecture with integrated exercises Learning Methods: Review of lecture material, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6

Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for Accompanying Courses	Attendance in the accompanying lecture on Control Engineering is strongly recommended, as students must take a joint exam (module exam); in addition, attendance in the accompanying laboratory applications is strongly recommended—see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course H11.2 226157 Control Engineering

This course is a required course in Module H11

Course Coordinator	Prof. Dr.-Ing. Mohamed Ibrahim
Semester	6
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Control Engineering
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide written exam
Exam Duration	60
Requirement	Required course
Prerequisites for participation	Prerequisite for taking Control Engineering: • Enrollment in the Control Systems lecture, since a joint exam (module exam) must be taken. • Knowledge of mathematics equivalent to the modules Mathematical Foundations 1 and Mathematical Foundations 2, as well as knowledge of electrical engineering equivalent to the module Fundamentals of Electrical Engineering.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lecture 1 weekly contact hour, Exercise 1 weekly contact hour Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6

Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lecture on Control Engineering is strongly recommended, as a joint exam (module exam) must be taken; in addition, attendance at the accompanying laboratory sessions is strongly recommended—see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Special Notes	
Literature/Learning Resources	
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course H11.3 226158 Laboratory Applications

This course is a required course in Module H11

Course Coordinator	Prof. Dr.-Ing. Anke Ostertag
Semester	6
Frequency	Every semester
Course Type	Lab
Language of Instruction	German
Course Name (English)	Laboratory Applications
Credits (ECTS)	2.5
Lectures and seminars	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on the Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessed throughout the course via a design project
Exam duration	
Requirement	Required course
Prerequisites for Participation	
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Laboratory experiments 1 weekly contact hour, experiment reports 1 weekly contact hour Teaching methods: Practical laboratory experiments with reporting Learning Methods: Review of the lab session, revision of corrected lab reports, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	
Personal Competence: Social Competence	
Personal Competence: Independence	
Competency level according to the DQR	6
Contents	Learning Outcomes: (formerly Learning Objectives) Qualification Objectives:
Recommendation for Accompanying Courses	Attendance at the accompanying lectures on Control Engineering and Control Theory is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/

Other Special Notes	Attendance is mandatory.
Literature/Learning Resources	
Schedule in the Course Catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module H12 226160 Purchasing and Sales Management 1

Duration of the Module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Wolfgang Albrecht
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Purchasing and Sales Management 1 Technical Purchasing and Sales Management 1
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students possess subject-specific and theoretical knowledge as well as broad and integrated professional knowledge, including current developments in the field and advancements in the academic areas of industrial purchasing and sales. Participants are thus qualified for roles in the purchasing and sales of technically complex goods at companies operating in industrial or capital goods markets. Students understand the necessity of intercultural knowledge in global purchasing and sales processes.
Professional Competence: Skills, Knowledge Acquisition	Students possess a broad spectrum of methods for addressing complex problems in the sales of multidimensional capital goods. In doing so, they can independently develop and evaluate new sales-related solutions while taking into account various criteria. They understand the interplay, interrelationships, and implications for upstream procurement-related issues.
Personal Competence: Social Competence	Students are able to: - work responsibly and with self-awareness in professional and expert teams - proactively address problems within teams and heterogeneous working groups - present, discuss, and further develop complex subject-specific problems and solutions to a professional audience using sound reasoning
Personal Competence: Independence	Students can reflect on, evaluate, and independently pursue their own and externally set learning and work goals, take responsibility for them, and draw conclusions regarding their own work processes as well as those of the team, shaping them in a sustainable manner.
Competency level according to the DQR	6

Prerequisites for Participation	Knowledge equivalent to that covered in the courses “Marketing,” “Rhetoric and Presentation Techniques,” “Practical Business Studies,” and the “Practical Study Semester” is required.
Special Features / Availability	
Scheduling in the Course Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H12.1 226161 Technical Purchasing and Sales Management 1

This course is a required course in Module H12

Course Instructor	Prof. Dr.-Ing. Wolfgang Albrecht
Semester	6
Frequency of offering	Every semester
Type of course	Lecture with integrated exercise session
Language of instruction	German
Course Title (English)	Technical Purchasing and Sales Management 1
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Knowledge covering the courses in Marketing, Rhetoric and Presentation Techniques, Practical Business Studies, and the Practical Study Semester is required.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 4 SWS Teaching Methods: Lecture with integrated exercises Learning Methods: Lecture preparation and follow-up, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	Students can justify the need for a paradigm shift from product-oriented to customer-oriented sales design and derive a customer-benefit-oriented sales process design from this. They have mastered the combination of engineering and business sciences, integrated with legal and psychological expertise. Their communication skills enable them to serve as a bridge between customers and their own company Students possess broad and integrated subject-matter expertise, including scientific foundations, practical application in the field of capital goods sales, and a critical understanding of the most important theories and methods of optimal relationship management in capital goods marketing.

Professional Competence: Skills and Knowledge Acquisition	Students can prepare for and conduct negotiation processes, present, evaluate, and implement the results, and monitor the results. They analyze the impact of customer management on potential for increasing benefits and revenue, service offerings, and quality, and develop a product- and company-specific sales strategy based on these findings. They possess a broad range of methods for handling complex customer analysis and capital goods sales tasks and can apply these to customer business processes as well as in key account management. Learning Objectives: Students recognize the necessity and implementation of customer management, taking into account the life cycle of business relationships. Students can analyze, evaluate, and design a sales organization with a focus on specific products and industries. They can apply the most common price negotiation strategies and are familiar with the staffing requirements in the capital goods market. Students can analyze and evaluate incentive systems in terms of motivation and goal achievement, as well as design and adapt them according to the situation. They can apply the KAM strategy and context of business model development, and prepare for and conduct (price) negotiations.
Personal Competence: Social Competence	Students can present complex, subject-specific sales problems in the context of capital goods marketing, as well as their solutions to experts, discuss them in a nuanced manner, and advocate for them, as well as further develop them within professional groups. They can recognize different behavioral and negotiation styles and respond to them appropriately. They possess sufficient social-psychological skills to serve as a link between customers and their own company. Students can analyze and evaluate incentives related to their motivation and goal achievement, and apply them in a manner consistent with their personality.
Personal Competence: Independence	Students are able to analyze and evaluate sales and customer organizations. They explore the interplay between sales and purchasing relationships as well as information, and derive from this the success factors and requirements for key account management. They understand the necessity of interdisciplinary interaction with the functional and business units of development, production, purchasing, and sales, and utilize this to achieve overall project success.
Competency Level According to the DQR	6

Contents	1. Customer Management 2. Life Cycle of Business Relationships 3. Establishment, Design, and Management of a Sales Organization 4. Pricing Negotiation Strategies 5. Personnel Requirement Profiles in Technical Sales 6. Incentive Systems in Capital Goods Marketing 7. Key Account Management 8. Pricing Strategy, Price Management, and Price Competition 9. Conversation and Negotiation Skills 10. Relationship Management Based on Information Gaps Learning Objectives: Students recognize the necessity and implementation of customer management, taking into account the life cycle of business relationships. Students can analyze, evaluate, and design a sales organization with a focus on specific products and industries. They can apply the most common price negotiation strategies and are familiar with the personnel requirements in the capital goods market. Students can analyze and evaluate incentive systems in terms of motivation and goal achievement, as well as design and adapt them according to the situation. They can apply the KAM strategy and context of business model development, and prepare for and conduct (price) negotiations.
Recommendation for accompanying courses	
Other Special Features	
Literature/Learning Resources	• Rentzsch, Hans-Peter: Customer-Oriented Selling in Technical Sales: Successful Relationship Management in Business-to-Business; Springer-Gabler, 2012 • Winkelmann, Peter: Sales Strategy and Sales Management: The Tools of Integrated Customer Management (CRM), Munich, 2012 • Kuhlmann, Eberhard: Industrial Sales Management; Munich, 2001 • Kleinaltenkamp, Michael; Saab, Samy: Technical Sales: A Practical Introduction to Business-to-Business Marketing (Paperback), Springer-Gabler, 2021 • Kieser, Heinz-Peter: Variable Compensation in Sales—10 Building Blocks for Motivating Compensation in Field and In-House Sales; 3rd edition, Springer-Gabler, 2023
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Module H13 226165 Accounting

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. rer. pol. Martin Tettenborn
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam format: Written
Course Content	Accounting • International Accounting and Business Analysis and • Controlling
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students possess in-depth knowledge of international accounting standards, methods of financial statement analysis, and controlling tools. They understand their theoretical foundations, objectives, and interrelationships and can contextualize their significance for business decision-making processes.
Professional Competence: Skills and Knowledge Acquisition	Students are able to apply methods of international accounting, financial statement analysis, and controlling to real-world problems. They can analyze key figures and reports, interpret results, and present them in a manner tailored to the intended audience. In addition, they can independently acquire in-depth knowledge of current developments in accounting and controlling and critically reflect on this knowledge.
Personal Competence: Social Competence	
Personal Competence: Independence	Students tackle tasks in the fields of accounting and controlling independently and in a structured manner. They are able to apply their knowledge to new problems, make informed decisions, and continue their learning process independently.
Competency Level According to the DQR	6
Prerequisites for Participation	A good command of English, equivalent to the level covered in the "Foreign Language" course, is required, as English-language specialized literature is also used.
Special Features / Availability	
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course H13.1 226166 Int. Accounting and Business Analysis

This course is a required course in Module H13

Course Coordinator	Prof. Dr. rer. pol. Martin Tettenborn
Semester	6
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	English
Course Title (English)	International Accounting and Business Analysis
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required course
Prerequisites for participation	A good command of English equivalent to the "Foreign Language" course is required, as English-language academic literature is also used.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 1.5 SWS, Seminar 0.5 SWS Teaching methods: Lecture with seminar Learning Methods: Self-study (review of lecture material, reading of literature)
Subject-Specific Competence: Knowledge and Understanding	Knowledge of the main IFRS, financial statement analysis, and the relationship between financial accounting and management accounting.
Professional Competence: Skills and Knowledge Acquisition	Skills Students are able to apply fundamental methods of international accounting and business analysis, interpret international accounting standards, and use financial indicators to analyze and evaluate business situations. Knowledge Acquisition Students are able to independently acquire in-depth knowledge of international accounting issues and analytical methods, critically assess this knowledge, and apply it to diverse international business contexts.

Personal Competence: Social Competence	Communication and Cooperation Students are able to - communicate information and issues related to international accounting and financial statement analysis clearly, precisely, and in a manner tailored to the target audience, - present professional topics in international accounting and financial statement analysis in an understandable way, both orally and in writing, - convincingly defend their arguments in interdisciplinary and intercultural discussions on specific topics in international accounting and financial statement analysis.
Personal Competence: Independence	Students deepen their knowledge of financial statement analysis through practical case studies to be completed independently and learn how to present the results in a manner tailored to the target audience.
Competency Level According to the DQR	6
Content	Learning Outcomes: Qualification objectives Course description By the end of the course, students will be able to: - Gain a basic understanding of corporate accounting—that is, how a company's financial position is presented to different stakeholders depending on their various claims and objectives; - understand the growing importance of global financial markets and their relationship to financial reporting; - understand the usefulness of a conceptual framework and the objective of financial reporting; - understand basic accounting assumptions and measurement principles. Each lecture will cover a different set of accounting topics. An instructional unit includes lectures, class discussions, and analyses of financial reports. The following are the main topics that will be covered: - Introduction to Accounting - Importance of Global Markets - Objective of Financial Reporting - Challenges Facing Financial Reporting - Conceptual Framework - Measurement Principles - Revenue recognition - Analysis of Various Financial Reports
Recommendation for accompanying courses	Attendance at the accompanying course "Controlling" is strongly recommended; see the course schedule for the respective semester. Course schedule: https://splan.hs-heilbronn.de/
Other Special Notes	

Literature/Learning Resources	• IFRS (current edition) • Selected financial reports and journal articles • Kieso/Weygandt/Warfield; Intermediate Accounting, Wiley, Hoboken, 2018
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course H13.2 226167 Management Accounting

This course is a required course in Module H13

Course Instructor	Prof. Dr. rer. pol. Martin Tettenborn
Semester	6
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Controlling
Credits (ECTS)	2.5
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	40
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	90
Requirement	Required course
Prerequisites for participation	H4 Internal Accounting
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly course hours (SWS): Lecture 1 SWS, Seminar 1 SWS Teaching methods: Lecture with integrated exercises Learning Methods: Lecture review, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	
Professional Competence: Skills and Knowledge Acquisition	Skills Students are able to apply controlling methods and tools for planning, managing, and monitoring business processes. They can process relevant information, interpret key performance indicators, and support decision-makers with well-founded analyses. Knowledge Acquisition Students can apply their knowledge of management accounting to new business challenges, identify and critically evaluate appropriate sources of information, and independently gain in-depth knowledge of current developments in management accounting.

Personal Competence: Social Competence	Upon successful completion of the module, students will be able to demonstrate knowledge and understanding - the course content in management accounting. apply, use, and generate knowledge - to apply existing knowledge of management accounting in a targeted manner in various contexts, - apply theoretical knowledge of management accounting to practical problems, - independently generate new knowledge from the material taught.
Personal Competence: Independence	Academic Self-Concept or Professionalism - to develop a fundamental understanding of current and future-oriented topics in management accounting, - to tackle professional challenges in a professional and responsible manner, - to critically review decisions made and adjust them as needed. Communication and Cooperation - To convey information and issues related to management accounting clearly, precisely, and in a manner appropriate to the target audience, - to present technical matters related to management accounting clearly and comprehensibly, both orally and in writing, - to persuasively present their arguments in interdisciplinary or intercultural discussions on specific topics in controlling.
Competency Level According to the DQR	6
Content	Communication and Cooperation - To convey information and issues related to management accounting clearly, precisely, and in a manner appropriate to the target audience, - present technical aspects of management accounting clearly and comprehensibly, both orally and in writing, - to present your arguments persuasively in interdisciplinary or intercultural discussions on specific topics in management accounting.
Recommendation for Accompanying Courses	Attendance at the accompanying course "International Accounting and Business Analysis" is strongly recommended; see the course schedule for the respective semester. Timetable: https://splan.hs-heilbronn.de/
Other Details	

Literature/Learning Resources	• Course Notes • Wöhe, Günter; Döring, Ulrich; Brösel, Gerrit: Introduction to General Business Administration. Munich, Franz Vahlen Publishers, current edition • Friedl, Gunther; Hofmann, Christian; Pedell, Burkhard: Cost Accounting: A Decision-Oriented Introduction. Munich, Franz Vahlen Publishers, current edition • Horváth, Péter; Gleich, Ronald; Seiter, Mischa: Controlling. Munich, Franz Vahlen Publishers, current edition • Weber, Jürgen; Schäffer, Utz: Introduction to Controlling. Stuttgart, Schäffer-Poeschel, current edition
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Module H14 226170 Production Management (Advanced)

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Wolfgang Ernst
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Production Management (Advanced) Production Management 2
Professional Competence: Knowledge and Understanding (Learning Objectives)	Upon successful completion of this module, students will have a broad and integrated understanding of the methodological approaches to issues in logistics, materials management, procurement, internal resource allocation, and warehousing. Through the systematic presentation of external procurement management, students will be able to handle and evaluate supplier assessment systems, as well as develop and evaluate procurement strategies. Students will gain a systematic understanding of the interrelationships between production organization and logistics. Practical relevance is a key focus. Upon completion of this module, students will have a critical understanding of the most important theories, principles, and methods of logistics and will be able to deepen their knowledge vertically, horizontally, and laterally. They will have the knowledge needed to further develop their expertise in the fields of production management and procurement.
Professional Competence: Skills, Knowledge Acquisition	Upon completion of this module, students will have a very broad range of methods and theories in the fields of logistics, materials management, procurement, and production organization. They will be able to plan internal and external procurement systems in an integrated manner and evaluate them by considering alternative courses of action and interactions with related fields. They can apply the necessary transfer skills. To meet the frequently changing demands of professional practice, they are able to develop new solutions appropriate to the situation and evaluate them according to different criteria.

Personal Competence: Social Competence	Students are able to present complex interdisciplinary topics in a structured, goal-oriented, and audience-specific manner. They are able to proactively take into account the interests and information needs of their audience, as well as potential problems. In specialized teams, they can responsibly represent the fields of logistics, materials management, and production organization (parts manufacturing and assembly). In teams with experts from other fields, they can effectively advocate for and further develop these areas.
Personal Competence: Independence	Students can independently set, pursue, and take responsibility for their own learning and work goals. They have learned the consequences their work behavior has for themselves personally and for the student community.
Competency Level According to the DQR	6
Prerequisites for Participation	To successfully complete the Advanced Production Management module, students must have knowledge of production management equivalent to that covered in the Production Management module.
Special Features / Availability	
Scheduling in the Course Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Course H14.1 226171 Production Management 2

This course is a required course in Module H14

Course Coordinator	Prof. Dr.-Ing. Wolfgang Ernst
Semester	6
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Production Management 2
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Prerequisite for taking Production Management 2: Knowledge of production management equivalent to the content covered in the Production Management 1 course.
Teaching/Learning Methods (Instructional Formats)	Distribution of weekly contact hours: Lectures with discussions: 3 weekly contact hours; exercises in individual and group work: 1 weekly contact hour Teaching methods: Lectures delivered by the instructor. The exercises are presented by the students and, if necessary, supplemented or corrected by the instructor. Learning methods: Preparation for and follow-up on lectures, exercises on the ILIAS e-learning platform; exercises must be prepared independently, either individually or in self-organized small groups; independent study of the literature.

Subject-Specific Competence: Knowledge and Understanding	Upon successful completion of this course, students will have a broad and integrated understanding of the methodological approach to issues in logistics, materials management, procurement, and internal resource allocation, as well as inventory management. Through the systematic presentation of external procurement management, students will be able to handle and evaluate supplier assessment systems, as well as develop and evaluate procurement strategies. Students will gain a systematic understanding of the interrelationships between production organization and logistics. Practical relevance is a key focus of the course. Upon completion of this course, students will have a critical understanding of the most important theories, principles, and methods of business organization and will be able to deepen their knowledge vertically, horizontally, and laterally. They will possess the knowledge necessary for the further development of the field of production management and procurement.
Professional Competence: Skills and Knowledge Acquisition	Upon completion of this course, students will have a very broad range of methods and theories in the areas of logistics, materials management, procurement, and production organization. They can plan internal and external procurement systems in an integrated manner and evaluate them in relation to alternative courses of action and interactions with related areas. They can apply the necessary transfer skills. To meet the frequently changing demands of professional practice, they are able to develop new solutions appropriate to the situation and evaluate them according to different criteria.
Personal Competence: Social Competence	Students can present complex interdisciplinary issues in a structured, goal-oriented, and audience-specific manner. They are able to proactively take into account the interests and information needs of their audience as well as potential problems. In specialized teams, they can responsibly represent the fields of logistics, materials management, and production organization (parts manufacturing and assembly). In teams with experts from other fields, they can effectively advocate for and further develop these areas.
Personal Competence: Independence	Students can independently set, pursue, and take responsibility for their own learning and work goals. They have learned the consequences their work behavior has for themselves personally and for the student community.
Competency Level According to the DQR	6

Contents	Learning Outcomes: Qualification Objectives: In specialized teams, students can responsibly represent the fields of logistics, materials management, purchasing, and production organization (parts manufacturing and assembly). In teams with experts from other fields, they can defend and further develop the aforementioned subject areas through reasoned argumentation. Outline of the submodule: 1. Production Logistics 2. Materials Management 3. Procurement Logistics 4. Distribution Logistics 5. Production Organization - Overview 6. Parts Manufacturing 7. Assembly 8. Quality
Recommendations for Related Events	SAP Course
Other Special Features	Field trips based on student interest and involvement in the organization

Literature/Learning Resources	• Bühner, R.: Business Administration and Organizational Theory, Munich: Oldenbourg Wissenschaftsverlag, latest edition • Eversheim, W.: Organization in Production Engineering. 4 volumes: Fundamentals, Design, Work Planning, Manufacturing, and Assembly, Berlin, Heidelberg: Springer Verlag, latest edition • Kummer, S. (ed.); Grün, O.; Jammerneegg, W.: Fundamentals of Procurement, Production, and Logistics, Munich: Pearson Studium Verlag, latest edition • Slack, N.; Brandon-Jones, A., Burgess, N.: Operations Management, Munich: Pearson Studium Verlag, latest edition • Wiendahl, H.-P.; Wiendahl, H.-H.: Operations Management for Engineers, Munich/Vienna: Hanser Verlag, latest edition • Thonemann, U.: Operations Management, Munich: Pearson Studium Verlag, latest edition • Will, T.: Production Management 4.0. In: Erner, M. (ed.): Management 4.0 – Business Management in the Digital Age. Berlin, Heidelberg: Springer Verlag, latest edition • Vahrenkamp, R.: Production Management, Munich: Oldenbourg Wissenschaftsverlag, latest edition • Neumann, K.: Production and Operations Management, Berlin, Heidelberg: Springer Verlag, latest edition • Bauernhansl, T.; ten Hompel, M.; Vogel-Heuser, B.: Industry 4.0 in Production, Automation, and Logistics, Wiesbaden: Springer Vieweg Verlag, latest edition • Tempelmeier, H.: Supply Chain Management and Production, Norderstedt: BoD Verlag, latest edition • Reese, J.: Operations Management, Munich: Verlag Franz Vahlen, latest edition • Bauernhansl, T.; ten Hompel, M.; Vogel-Heuser, B.: Handbook of Industry 4.0, Volumes 1–4, Wiesbaden: Springer Vieweg Verlag, latest edition • Roth, A. (Ed.): Introduction to and Implementation of Industry 4.0, Berlin, Heidelberg: Springer Gabler Verlag, latest edition • Westkämper, E.; Spath, D.; Constantinescu, C.; Lentjes, J.: Digital Production, Berlin, Heidelberg: Springer Verlag, latest edition • VDI Guideline VDI 4499, Digital Factory, Fundamentals, Sheet 1, Düsseldorf: VDI-Verlag, latest edition • REFA Association for Work Studies and Business Organization (ed.): Methodology of Business Organization (MLO). Parts 1–3, Munich/Vienna: REFA Verlag, latest edition • Up-to-date literature from print and online media • Course Materials
Schedule in the course timetable	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Module H15 226175 Elective

Duration of the module	1 semester
SWS	4
Exam Type	Specified in the course descriptions.
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Rainald Kasprik
Teaching, Learning, and Assessment Methods	Engineering Specialization: Laboratory-based analysis of a practical or theoretical problem Business Administration Specialization: Seminar-based analysis of a practical or theoretical problem
Course Content	Selected scientific problems from engineering or business administration.
Professional Competence: Knowledge and Understanding (Learning Objectives)	Under the guidance of the instructors, students deepen the knowledge and skills they have acquired with regard to the scientific problem.
Professional Competence: Skills, Knowledge Acquisition	The module promotes the independent acquisition of task-specific subject knowledge and problem-solving strategies.
Personal Competence: Social Competence	By presenting interim and preliminary results, students practice their oral communication skills and learn to handle critical questions.
Personal Competence: Independence	Through dialogue with instructors, students foster reflection and the further development of their judgment.
Competency level according to the DQR	6
Prerequisites for Participation	The prerequisites are specified in the two course descriptions.
Special Features / Applicability	Students must choose between the following courses • Engineering Specialization and • Business Administration Specialization.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Course Assessment via Combined Exam	

Course H15.1 226176 Engineering Specialization

This course is an elective in Module H15

Course Coordinator	Prof. Dr.-Ing. Ingo Kühne
Semester	6
Frequency of offering	Every semester
Type of course	Lab
Language of Instruction	German
Course Name (English)	Advanced Engineering Studies
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide via presentation
Exam Duration	
Requirement	Elective
Prerequisites for Participation	Knowledge of general engineering fundamentals from the undergraduate program and in-depth knowledge of engineering subjects from the graduate program.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Laboratory project 3 SWS, written report 1 SWS Teaching Methods: • Introduction to the specific task of the lab project. • Regular advisory and team meetings. Learning Methods: • Independent completion of the lab project using fundamental principles of natural and engineering sciences. • Preparation of a final report or presentation.

Professional Competence: Knowledge and Understanding	- Students work on a project independently or in a team and demonstrate that they can apply both scientific methods and project management methods. - They are proficient in describing a task in an engineering-appropriate manner. - They are able to plan a project and create a schedule and a statement of objectives that address both content and deadlines. - Upon successful completion of the project, they are able to comprehensively present the project's results in a document and/or a presentation.
Professional Competence: Skills and Knowledge Acquisition	Students possess a broad spectrum of specialized cognitive and practical skills when working on the project.
Personal Competence: Social Competence	Define, reflect on, and evaluate goals during the implementation of the project, and independently and sustainably design corresponding learning and work processes—particularly through practical activities—to ensure success.
Personal Competence: Independence	Explain the project, substantiate it using project results, and communicate it comprehensively. Develop solutions to problems as part of a group.
Competency Level According to the DQR	6

Content	Internal/external assignments in the form of laboratory projects in the field of engineering or related fields (e.g., natural sciences, computer science). Learning outcomes: • Self-organization of a student workgroup for the work on an interdisciplinary project. • Joint goal-setting and scheduling. • Organization using project management methods. • Assignment of specific tasks to working group members. • Regular meetings to compare actual and target project progress. • Planning and conducting a presentation event to present the results and/or presenting the results • in the form of written documentation. Learning Objectives: • Developing, carrying out, and evaluating an engineering problem in the form of a completed project. • Learning project management methods in practice.
Recommended companion courses	
Other Special Features	
Literature/Learning Resources	• Project descriptions (Ilias e-learning platform) • H. Hering. Technical Reports—Organizing Clearly, Designing Well, Presenting Convincingly. Springer Berlin / Heidelberg, 2015. • M. Heinitz. Academic Writing for Engineers. BoD - Books on Demand, 2018. • M. R. C. van Dongen. LaTeX and Friends. Springer Berlin / Heidelberg, 2012.
Schedule in the Course Calendar	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course H15.2 226177 Advanced Business Administration

This course is an elective in Module H15

Course Coordinator	Prof. Dr. Rainald Kasprk
Semester	6
Frequency	Every semester
Type of Course	Seminar
Language of Instruction	German English
Course Name (English)	Advanced Business Studies
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-wide via presentation
Exam Duration	
Requirement	Elective
Prerequisites for Participation	Proficiency in English from the Foreign Languages course (226047) is required. Additionally, knowledge of the modules Internal Accounting (226115), Analysis of Empirical Data (226140), and Methods of Market Design (226120).
Teaching/Learning Methods (Instructional Formats)	At the beginning of the semester, students select a topic from a list of available topics. A list of foundational literature is provided for each topic. Class time is divided between mandatory group sessions and individual consultation hours.
Professional Competence: Knowledge and Understanding	Students acquire an in-depth understanding of practical or theoretical business administration issues.
Professional Competence: Skills and Knowledge Acquisition	Students deepen their ability to familiarize themselves with new issues and to research and apply appropriate approaches or methods.
Personal Competence: Social Skills	Through a mandatory presentation in which they defend their findings before the course participants, students expand their communication skills.
Personal Competence: Independence	Students deepen their ability to evaluate and assess potential solutions or problem-solving methods.
Competency level according to the DQR	6

Content	Learning Outcomes: A well-founded, scholarly analysis of an issue in corporate management, market research, or business administration. Qualification Objectives: Independent development of a theoretical approach or independent resolution of a practical business problem based on original texts from academic and practical business sources.
Recommended companion courses	
Other Special Features	Students are expected to use English-language specialized literature to acquire knowledge and address course topics.
Bibliography/Learning Resources	Cargill, M., and O'Connor, P.: Writing Scientific Research Articles. Wiley Blackwell, 2009. Literature for familiarizing students with the specific research question will be provided as needed during the course.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via Combined Exam	

Module H16 226180 General Engineering Studies

Duration of the module	1 semester
SWS	
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	2.5
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Ingo Kühne
Teaching, Learning, and Assessment Methods	Depending on the selected course.
Course Content	General Engineering Studies • Current Topics
Professional Competence: Knowledge and Understanding (Learning Objectives)	Depending on the selected course.
Professional Competence: Skills, Knowledge Acquisition	Depending on the selected course.
Personal Competence: Social Skills	Depending on the selected course.
Personal competence: Independence	Depending on the selected course.
Competency level according to the DQR	6
Prerequisites for participation	Depending on the selected course.
Special Features / Applicability	Completion of the H16 module "General Advanced Engineering Studies" is demonstrated by participation in curricular courses within the Engineering Sciences subject group during the advanced study phase at the Faculties of Technology and Business or Technology, with a workload of at least 2.5 ECTS. The relevant examination board decides on recognition. It is recommended that you submit your request for recognition before the start of the lecture period, no later than the first four weeks of lectures.
Scheduling in the Class Schedule	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Course H16.1 226181 Current Issues

This course is a required course in Module H16

Course Instructor	Prof. Dr.-Ing. Ingo Kühne
Semester	6
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German, English
Course Title (English)	Current Aspects
Credits (ECTS)	2.5
SWS	4.0
Workload - Contact Hours	
Workload - Self-study	
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours. The workload, number of SWS, course type, and exam type correspond to the selected offering of the curricular course. The minimum requirements are 2 SWS and 2 ECTS.
Exam Type	Course-based exam
Exam duration	
Requirement	Required course
Prerequisites for participation	Depends on the selected course.
Teaching/Learning Methods (Instructional Formats)	Depends on the selected course.
Subject-Specific Competence: Knowledge and Understanding	Depends on the selected course.
Subject-Specific Competence: Skills and Knowledge Acquisition	Depends on the selected course.
Personal Competence: Social Competence	Depends on the selected course.
Personal Competence: Independence	Depends on the selected course.
Competency level according to the DQR	6
Content	Depends on the selected course.
Recommendations for accompanying courses	

Other Special Notes	The successfully completed exam must be entered into the grade report along with the application for recognition. The application for recognition and step-by-step instructions can be found in the folders ILIAS/ WI/ Forms and Info/ Forms and How do I fill out the application for recognition? As well as at the following link: https://ilias.hs-heilbronn.de/ilias.php?baseClass=ilrepositorygui&ref_id=50087
Literature/Learning Resources	Depending on the course selected.
Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Module H17 226185 Purchasing and Sales Management 2

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr.-Ing. Wolfgang Albrecht
Teaching, Learning, and Assessment Methods	Teaching method: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Purchasing and Sales Management 2 Technical Purchasing and Sales Management 2
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students possess subject-specific and theoretical knowledge as well as broad and integrated professional knowledge, including current developments in the field and advancements in the academic areas of industrial purchasing and sales. Participants are thus qualified for roles in the purchasing and sales of technically complex goods at companies operating in industrial or capital goods markets. Students understand the necessity of intercultural knowledge in global purchasing and sales processes.
Professional Competence: Skills, Knowledge Acquisition	Students possess a broad range of methods for addressing complex problems in the procurement of multidimensional capital goods. In doing so, they can develop new procurement-related solutions while taking into account Independently develop and evaluate different standards, while understanding the interplay, relationships, and implications for downstream sales-related issues.
Personal Competence: Social Competence	Students are able to: - work responsibly and with self-reflection in specialized and expert teams - proactively address problems within teams and heterogeneous working groups present, discuss, and further develop complex subject-specific problems and solutions to a professional audience using sound reasoning
Personal Competence: Independence	Students can reflect on, evaluate, and independently pursue their own and externally set learning and work goals, take responsibility for them, and draw conclusions regarding their own work processes as well as those of the team, shaping them in a sustainable manner.
Competency level according to the DQR	6

Prerequisites for Participation	Knowledge equivalent to the course “Technical Purchasing and Sales Management 1” is required.
Special Features / Availability	
Schedule in the course catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Course H17.1 226186 Technical Purchasing and Sales Management 2

This course is a required course in Module H17

Course Coordinator	Prof. Dr.-Ing. Wolfgang Albrecht
Semester	7
Frequency	Every semester
Course Type	Lecture with integrated seminar
Language of Instruction	German
Course Title (English)	Technical Purchasing and Sales Management 2
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	Knowledge equivalent to the course "Technical Purchasing and Sales Management 1" is required.
Teaching/Learning Methods (Instructional Formats)	Distribution of SWS: Lecture 4 SWS Teaching Methods: Lecture with integrated exercises Learning Methods: Lecture preparation and follow-up, assignments on the ILIAS e-learning platform
Professional Competence: Knowledge and Understanding	Students can justify the need for a paradigm shift from product-oriented to supplier-oriented procurement and derive a benefit-oriented design for the goods exchange process from this. Students possess broad and integrated subject knowledge, including the scientific foundations, practical application in the field of capital goods marketing, and a critical understanding of the most important theories and methods of optimal procurement strategy. In addition to solid technical knowledge, they possess a deep understanding of products, processes, and materials, as well as expertise in procurement, supplier management, and contract management. They understand the interrelationship between business acumen, market knowledge, and expertise in project and cost management and project success

Professional Competence: Skills and Knowledge Acquisition	Students can prepare for and conduct negotiation processes in a manner appropriate to the audience, and can present, evaluate, implement, and track the results. They analyze the impact of supplier management on cost-saving potential, service offerings, and quality, and develop a product- and company-specific procurement strategy based on these findings. They possess a broad range of methods for handling complex purchasing and capital goods sales tasks.
Personal Competence: Social Competence	Students can present complex, subject-specific purchasing issues in the context of capital goods marketing—along with their solutions—to experts in a well-reasoned manner; discuss and advocate for them in a nuanced way; and further develop these solutions in specialized groups. They recognize different personalities and their negotiation styles and can respond appropriately to each situation. They recognize the influence of social skills—such as communication and the ability to collaborate—on the course of a conversation and the success of negotiations.
Personal Competence: Independence	Students are able to analyze and evaluate procurement organizations. They explore the interplay between sales, development, and purchasing relationships as well as information flows, and from this deduce success factors and requirements for supplier selection and management, as well as the necessity of interdisciplinary interaction with the functional and corporate departments of development, production, controlling, and sales with a view to corporate success.
Competency Level According to the DQR	6
Content	Learning Outcomes: 1. Supplier Management 2. Life Cycle of Business Relationships 3. Structure, Design, and Management of a Procurement Organization 4. Purchasing and Price Negotiation Strategies 5. Personnel Requirement Profiles in Technical Purchasing 6. Development of a Procurement Strategy in Capital Goods Marketing 7. Pricing Strategy, Price Management, and Price Competition 8. Conducting Discussions and Negotiations Learning Objectives: Students recognize the necessity and implementation of a supply chain management, taking into account the life cycle of business relationships. Students can analyze, evaluate, and design a procurement organization and strategy specific to a product and industry. They can apply the most common price negotiation strategies and are familiar with the personnel requirements in capital goods marketing. Students can analyze and evaluate incentive systems in terms of motivation and goal achievement, as well as design and adapt them according to the situation. They can assess the impact of information gaps on negotiation and relationship strategies and derive appropriate measures.

Recommendation for Companion Courses	
Other Special Features	
Literature/Learning Resources	• Büsch, Mario: Practical Handbook of Strategic Purchasing—Methods, Procedures, and Worksheets for Professional Procurement Management; Springer, 2013 • Hirschsteiner, Günter: Purchasing Negotiations; Munich, Vienna, 2002 • Wenski, Guido: Sustainable Negotiations in Technical Purchasing: How to Achieve Win-Win Solutions in Procurement Management; Springer Fachmedien Wiesbaden, 2020 • Arnolds, Hans; Heege, Franz; Röh, Carsten; Tussing, Werner: Materials Management and Purchasing—Fundamentals—Special Topics—Exercises; Springer Fachmedien Wiesbaden, 2022
Schedule in the Course Catalog	Class Schedule: https://splan.hs-heilbronn.de/
Assessment for the Combined Exam	

Module H18 226190 Business Management

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of an individual assignment
Credits (ECTS)	5.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Rainald Kasprik
Teaching, Learning, and Assessment Methods	Teaching format: Lecture with integrated exercises Learning format: Lecture follow-up, assignments on the ILIAS e-learning platform Exam Format: Written
Course Content	Part 1: Controlling Strategic Action Part 2: Strategic Action in Organizations Part 3: Market-Based Situation and Root Cause Analysis Part 4: Qualitative and Quantitative Forecasting Methods Part 5: Normative and "Natural" Decision-Making Part 6: Dealing with Uncertainty (Risk Management, Innovation Management)
Professional Competence: Knowledge and Understanding (Learning Objectives)	Students learn to apply methods of information gathering, planning, and control that are aimed at the long-term and situation-specific orientation of the company.
Professional Competence: Skill in Knowledge Acquisition	Students learn the analytical methods relevant to the market-oriented orientation of a company.
Personal Competence: Social Competence	Students learn that the successful implementation of a corporate realignment depends to a large extent on the interpersonal skills of senior management.
Personal Competence: Independence	Students are able to evaluate selected methods of information gathering, planning, and monitoring.
Competency level according to the DQR	6
Prerequisites for Participation	
Special Features / Availability	
Schedule in the course catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment for the combined exam	

Course H18.1 226191 Strategic Business Planning

This course is a required course in Module H18

Course Instructor	Prof. Dr. Rainald Kasprk
Semester	7
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German
Course Name (English)	Strategic Corporate Planning
Credits (ECTS)	5.0
SWS	4.0
Workload - Contact Hours	45
Workload - Independent Study	80
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Course-based exam
Exam Duration	120
Requirement	Required course
Prerequisites for participation	
Teaching/Learning Methods (Instructional Formats)	Time Allocation: 2 SWS for lectures, 2 SWS for exercises Teaching Methods: Lecture with integrated exercises Learning methods: Review of lecture material, assignments on the ILIAS e-learning platform
Subject-Specific Competence: Knowledge and Understanding	Students learn the methodological foundations of market-oriented long-term business planning and recognize the relevance of situational conditions as well as the central role of implementation skills.
Professional Competence: Skills and Knowledge Acquisition	They develop the ability to select and evaluate analytical methods appropriate to the situation and gain an in-depth understanding of the specific challenges involved in implementing organizational innovation.
Personal Competence: Social Competence	Students gain insights into various approaches for reducing reservations about organizational innovations through targeted actions by managers. In addition, working on course materials in groups fosters the ability to collaborate effectively on tasks as part of a team.
Personal Competence: Independence	Students acquire the ability to evaluate processes for information gathering, planning, and monitoring while taking into account the perspectives of various stakeholders.
Competency Level According to the DQR	6

Content	Learning Outcomes: • Fundamentals: Strategic Controlling, “strategic” action • Assessment and analysis of the situation in the sales market • Predicting the future situation: qualitative and quantitative forecasting methods • Decision-making processes: normative and “natural” decisions • Dealing with uncertain events: risk management • Dealing with reservations and established habits: innovation management Learning Objectives: Qualification for the functional areas of corporate development and market-oriented corporate management (strategic marketing).
Recommendations for complementary courses	
Other Special Features	
Literature/Learning Resources	Alter, R.: Strategic Controlling. Oldenbourg, 2011. Bamberg, G., Coenenberg, A., Krapp, M.: Business Decision Making. Vahlen, 2008. Clemen, R.: Making Hard Decisions. Duxbury Press, 2014. Dillerup, R., Stoj, R.: Business Management. Vahlen, 2011. Jacobs, F.R., Chase, R.B., Aquilano, N.J.: Operations and Supply Management. 12th edition, 2009, Chapter 15 Koch, J., Riedmüller, F.: Market Research. De Gruyter Oldenbourg, 2021. Levin, H., McEvan, P.: Cost-Effectiveness Analysis. Sage, 2001. Porter, Michael E.: Competitive Strategy. Campus, 2013. as well as: Course materials in ILIAS
Scheduling in the course schedule	Class schedule: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Module H19 226195 Integrative Project Work

Duration of the module	1 semester
SWS	4
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	7.0
Requirements for Awarding Credits	The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Gertraud Peinel
Teaching, Learning, and Assessment Methods	Teaching method: Laboratory work. Academic supervision of practical projects by a professor. Learning format: Self-study: reading the literature, preparation, development work, working on the project assignment Examination format: Written exam and presentation.
Course Content	Learning Objectives: 1. Addressing a specified technical-practical problem 2. Self-organization of a work group 3. Description of an interdisciplinary project (task planning, technical and functional specifications, joint goal and schedule planning) 4. Organization using project management methods 5. Division of labor and tasks 6. Regular project meetings with comparisons of actual versus planned progress 7. Communication with potential customers or clients Learning Objectives: 1. Planning and conducting design reviews and presentation events to showcase results 2. Creating and delivering a presentation for potential clients and investors 3. Reflection on the experience from a project management perspective in the form of written documentation

Professional Competence: Knowledge and Understanding (Learning Objectives)	Students can apply the fundamental and specialized knowledge they have acquired in their respective disciplines and in business administration to a project and carry it out independently from the project proposal through to project completion. In particular, they are proficient in an interdisciplinary, theory-based approach to solving practical problems. Students understand the interrelationships that lead to a project's success when working in a team and when engaging with a client, potential customer, or the market. They can apply project management methods. Upon successful completion of the project, they are able to present the project's results comprehensively and in a manner appropriate to the audience, both in writing and in a presentation.
Professional Competence: Skills, Knowledge Acquisition	Students are able to plan a project independently and to develop a schedule and a set of objectives in terms of both content and deadlines.
Personal Competence: Social Competence	Students learn about teamwork, with a particular focus on: putting themselves in others' shoes, achieving goals collaboratively, making mistakes and correcting them, reflecting on their own behavior and work style, and conducting objective discussions. Students analyze the group dynamic processes involved in collaboration within a team and in interactions with external contacts. From this, they independently identify ways to structure their efforts to achieve a common goal.
Personal Competency: Independence	Students plan both the project and their own schedule, as well as their contribution to the outcome, independently with minimal guidance. They must independently plan, monitor, and evaluate their work and defend it in discussions with others.
Competency level according to the DQR	6
Prerequisites for Participation	Prerequisite for participating in Integrative Project Work: Knowledge of project management equivalent to the scope of the "Project Competence and Rhetoric" module
Special Features / Availability	
Scheduling in the Course Schedule	Timetable: https://splan.hs-heilbronn.de/
Assessment via a combined exam	

Course H19.1 226196 Integrative Project Lab

This course is a required course in Module H19

Course Instructor	Prof. Dr. Gertraud Peinel
Semester	6
Frequency	Every semester
Course Type	Lab
Language of Instruction	German, English
Course Name (English)	Integrative Project Laboratory
Credits (ECTS)	7.0
SWS	4.0
Workload - Contact Hours	45
Workload - Self-study	130
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Assessment takes place throughout the course through practical work
Exam Duration	
Requirement	Required course
Prerequisites for Participation	Prerequisite for participation in the Integrative Project Lab: • Knowledge of project management equivalent to the content covered in the Project Management course. • Successful completion of the internship semester.
Teaching/Learning Methods (Instructional Formats)	Weekly hours: 4 hours of lab work Teaching format: Laboratory work. Academic supervision of the practical projects by a professor. Learning format: Self-study: reading the literature, preparation, development work, working on the project assignment
Subject-Specific Competence: Knowledge and Understanding	Students can apply the fundamental and specialized knowledge they have acquired in their respective disciplines and in business administration to a project and carry it out independently from the project proposal through to project completion. In particular, they are proficient in an interdisciplinary, theory-based approach to solving practical problems. Students understand the interrelationships that lead to a project's success when working in a team and when engaging with a client, potential customer, or the market. They can apply project management methods. Upon successful completion of the project, they will be able to present the project's results comprehensively and in a manner appropriate to the audience, both in writing and in a presentation.

Professional Competence: Skills and Knowledge Acquisition	Students are able to plan a project independently and to develop a schedule and a set of objectives in terms of both content and deadlines.
Personal Competence: Social Skills	Students learn teamwork, with a particular focus on: putting themselves in others' shoes, achieving goals collaboratively, making mistakes and correcting them, reflecting on their own behavior and work style, and conducting objective discussions. Students analyze group dynamics in teamwork and in interactions with external contacts. From this, they independently identify ways to structure their efforts to achieve a common goal.
Personal Competency: Independence	Students plan both the project and their own schedule, as well as their contribution to the outcome, independently with minimal guidance. They must independently plan, monitor, and evaluate their work and defend it in discussions with others.
Competency level according to the DQR	6
Content	Learning Organization: 1. Addressing a specified technical-practical problem 2. Self-organization of a workgroup 3. Description of an interdisciplinary project (task planning, technical and functional specifications, joint goal and schedule planning) 4. Organization using project management methods 5. Division of labor and tasks 6. Regular project meetings with comparisons of actual versus planned progress 7. Communication with potential customers or clients Learning Objectives: 1. Planning and conducting design reviews and presentation events to showcase the results 2. Creating and delivering a presentation for potential clients and potential investors 3. Reflection on the experience from a project management perspective in the form of written documentation
Recommendations for related courses	
Other Special Features	

Literature/Learning Resources	• Terry Griffin, G.: Learning to Program with EV3: From Beginner to Master Programmer with LEGO® MINDSTORMS® EV3, dpunkt.verlag, 2015 • Stadler, A.: My LEGO EV3 Book: Build and Program Your Own Robots with LEGO MINDSTORMS (#makers DO IT), Carl Hanser Verlag, 2016 • Jakoby, W.: Project Management for Engineers. Vol. 217. Springer Fachmedien Wiesbaden, 2015 • Literature on NAO Robots: Available online in ILIAS
Schedule in the course catalog	Timetable: https://splan.hs-heilbronn.de/
Assessment via combined exam	

Module BT 226400 Final Exam

Duration of the module	1 semester
SWS	2
Exam Type	The module exam consists of weighted individual assessments
Credits (ECTS)	13.0
Requirements for Awarding Credit Points	Requirements for the final exam module to be recognized: Timely submission of the bachelor's thesis (four months after registration) The number of credits specified for the submodules will only be awarded if the required examination performance has been successfully completed.
Responsible	Prof. Dr. Rainald Kasprick
Teaching, Learning, and Assessment Methods	Independent preparation of an academic written paper.
Course Content	Final Exam - Bachelor's Thesis - Oral Bachelor's Examination
Professional Competence: Knowledge and Understanding (Learning Objectives)	Through dialogue with their advisors, students deepen their subject-specific expertise in relation to a narrowly defined topic.
Subject-Specific Competence: Skills, Knowledge Acquisition	Written communication skills are developed.
Personal Competence: Social Skills	Work on the topic typically takes place in close dialogue with advisors, either at companies or at the university. Students deepen their presentation skills and learn how to handle criticism.
Personal Competence: Independence	Students can independently address a well-defined topic in business administration and/or engineering in a results-oriented and appropriate manner, in accordance with scientific criteria and within a four-month timeframe.
Competency level according to the DQR	6
Prerequisites for Participation	Prerequisites for taking the "Final Exam" module: - Successful completion of the "Practical Study Semester" module. This includes successfully completing the internship colloquium—pre- and post-colloquium. - Proof of current enrollment must be provided when registering for the Bachelor's Thesis.

Special Notes / Applicability	We recommend the following procedure for selecting a advisor for your Bachelor's thesis • Select and contact a professor whose area of expertise aligns with the topic of your Bachelor's thesis • Ideally, the advisor should be a faculty member at Heilbronn University • For a Bachelor's thesis conducted at a company, a supervisor from the respective company may also be selected.
Scheduling in the Course Schedule	Individual scheduling. The topic of the bachelor's thesis must be assigned no earlier than the sixth semester and no later than six months after the end of the semester in which the last module exam was successfully completed (Section 26(1), Sentence 3, AT SPO Bachelor).
Course Credit for Combined Examination	

Course BT.1 226401 Bachelor's Thesis

This course is a required course in the BT module

Course Coordinator	Prof. Dr. Rainald Kasprick
Semester	7
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German, English
Course Name (English)	Bachelor's Thesis
Credits (ECTS)	12.0
SWS	2.0
Workload - Contact Hours	22.5
Workload - Self-study	277.5
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Thesis (Bachelor's Thesis)
Exam Duration	
Requirement	Required Course
Requirements for Participation	Requirements for writing the Bachelor's thesis: • Successful completion of the Practical Study Semester module. This includes successfully completing the internship colloquium—pre- and post-colloquium. • Proof of current enrollment must be provided when registering for the Bachelor's Thesis.
Teaching/Learning Methods (Instructional Formats)	Independent development of an academic topic in written form.
Subject-Specific Competence: Knowledge and Understanding	In dialogue with their advisors, students deepen their subject-specific competence with regard to a narrowly defined topic. Independent work includes: • Research, analysis, abstraction, and structuring of information and scholarly literature • Independent acquisition of relevant subject-specific and methodological knowledge • Written formulation of the content using appropriate technical terminology in accordance with scholarly standards.
Subject-Specific Competence: Skills and Knowledge Acquisition	Written communication skills are fostered. Depending on the research question, the following competencies are also developed to varying degrees: • Scientific methods and procedures • Structuring of content

Personal Competence: Social Skills	Work on the topic typically takes place in close dialogue with advisors, either in companies or at the university. • Students are able to integrate into the respective work environment. • They organize the necessary documents and schedule meetings with their advisor and, if applicable, any other relevant contacts. • They are able to accept criticism, engage with it constructively, and incorporate it into their bachelor's thesis. • Students are able to communicate their results and findings to experts, present their arguments, and defend their work.
Personal Competency: Independence	Students can independently address a well-defined topic in business administration and/or engineering in a results-oriented and appropriate manner according to scientific criteria and within a four-month timeframe. This includes: • Independently prioritizing, differentiating, and organizing relevant subject-matter and methodological knowledge within the bachelor's thesis • Independently answering the research question of the bachelor's thesis through the interpretation, evaluation, and reflection on the obtained results • Independently setting learning and work goals
Competency level according to the DQR	6
Contents	Learning Outcomes: Students independently select a topic. Qualification Objectives: Independent research and written presentation on a specific area of industrial engineering within a specified period of four months, taking into account scientific methodologies.
Recommended Accompanying Courses	
Other Special Features	
Literature/Learning Resources	• Theisen, M.: Scientific Writing. Munich, 2024. • Disterer, G.: Writing Term Papers and Theses. Springer Gabler Berlin, Heidelberg, 2019.
Schedule	Individual guidance by appointment.
Assessment for the Combined Exam	

Course BT.2 226402 Oral Bachelor's Examination

This course is a required course in the BT module

Course Coordinator	Prof. Dr. Rainald Kasprick
Semester	7
Frequency	Every semester
Type of Course	Lecture with integrated seminar
Language of Instruction	German, English
Course Name (English)	Oral Bachelor's Examination
Credits (ECTS)	1.0
SWS	0
Workload - Contact Hours	
Workload - Self-study	25
Detailed Note on Workload	The workload is calculated based on a time unit of 60 minutes per hour and a conversion rate of 1 ECTS = 25 hours.
Exam Type	Across all courses via an oral exam
Exam Duration	30
Requirement	Required course
Prerequisites for participation	Requirements for taking the oral bachelor's exam: • Successful completion of the Practical Study Semester module. • Proof of current enrollment must be provided when registering for the bachelor's thesis.
Teaching/Learning Methods (Instructional Formats)	Colloquium on the Bachelor's Thesis.
Subject-Specific Competence: Knowledge and Understanding	Through preparation for the oral bachelor's exam, the examinee deepens their understanding of, reflects on, and, if necessary, revises their paper with regard to the appropriateness of the selected approaches or methods.
Professional Competence: Skills and Knowledge Acquisition	Through preparation for the oral bachelor's exam, the examinee deepens, reflects on, and, if necessary, revises their paper with regard to interdisciplinary connections and its extradisciplinary references.
Personal Competence: Social Competence	The examinee practices responding to exam questions, including those that require critical analysis.
Personal Competence: Independence	Through preparation for the oral bachelor's exam, the examinee deepens, reflects on, and, if necessary, revises their work with regard to independence, a focus on results, and appropriateness.
Competency Level According to the DQR	6
Contents	Not applicable

Recommendation for accompanying courses	Attendance at other students' oral bachelor's exams (Section 9(5), Sentence 1 of the Supplementary Provisions for the Bachelor's Program).
Other Special Features	The oral Bachelor's examination is an in-person individual examination and generally lasts 30 minutes. The examination should strike a balance between the student's presentation and the examination questions to be answered. If the thesis was jointly prepared by several students, the oral Bachelor's examination may also be conducted jointly. The duration of the examination must be extended accordingly to ensure a clearly distinguishable and individual assessment.
Bibliography/Learning Resources	Literature for the Bachelor's thesis.
Scheduling in the Course Schedule	The oral Bachelor's examination is administered immediately following the completion of the evaluation process for the Bachelor's thesis by the supervising professor of the Bachelor's thesis at Heilbronn University (§ 27, sentence 5, AT SPO Bachelor) and a second examiner (§ 9, para. 2, AT SPO Bachelor). Notwithstanding § 8, para. 1, sentence 1 of the AT SPO Bachelor, the oral Bachelor's examination is not bound by the examination period defined in the university's academic calendar.
Evidence of Achievement for a Combined Examination	