MODULE HANDBOOK

Bachelor of Engineering

Bachelor Engineering Management (FS-OI-WINGE-02)

180 CP

Distance Learning

As of July 7th, 2025

INTERNATIONAL
UNIVERSITY OF
APPLIED SCIENCES

Classification: Undergraduate

Contents

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3. Semester

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4. Semester

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5. Semester

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6. Semester

Module DLBBT: Bachelor Thesis

1. Semester

Business 101

Module Code: DLBBAB_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Andreas Herrmann (Business 101)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Business 101 (DLBBAB01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam or Written Assessment: Written Assignment, 90 Minutes Study Format: myStudies Exam or Written Assessment: Written Assignment, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Businesses and their environment
- Types of business organizations
- Management and structure of business
- Production of goods and services
- Marketing of products and services
- Management of labor
- Accounting in business

Learning Outcomes

Business 101

On successful completion, students will be able to

- apply business and economic thinking and working methods.
- explain economic subjects and questioning models of business administration.
- classify and formulate corporate goals.
- describe and apply a general business decision-making process.
- recognize and design the organizational structure and process organization in the company.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programmes in the Business field

Business 101

Course Code: DLBBAB01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Business 101 deals with the basics of general business administration. It provides students with an understanding of the fundamental questions of doing business. In addition, basic organizational approaches of companies are shown. With the successful completion of the course, the students have gained fundamental knowledge in general business administration. This course lays the foundation for the advanced modules in the further course of their studies.

Course Outcomes

On successful completion, students will be able to

- apply business and economic thinking and working methods.
- explain economic subjects and questioning models of business administration.
- classify and formulate corporate goals.
- describe and apply a general business decision-making process.
- recognize and design the organizational structure and process organization in the company.

Contents

1. Businesses and their environment
   - 1.1 Concepts of business
   - 1.2 A system of economic relationships
   - 1.3 Business environment
2. Types of business organizations
   - 2.1 Companies in production and service
   - 2.2 Divisions of companies
3. Management and structure of business
   - 3.1 Basics of Business Management
   - 3.2 Functions of organizations, managers and control
   - 3.3 The decision making process
   - 3.4 Organizational structure of business
4. Production of goods and services

4.1 Origin and development of the production process
4.2 Industrial strategy of business

5. Marketing of goods and services
   5.1 Goals and types of marketing
   5.2 Marketing mix

6. Management of labor
   6.1 Process of management of labor
   6.2 Demand in labor
   6.3 Human relations in organizations

7. Accounting in business
   7.1 Functions and goals of accounting
   7.2 Spheres of accounting
   7.3 Fundamental principles of accounting

Literature
Compulsory Reading
Further Reading ▪ Covey, S. R. (2013). *The 7 habits of highly effective people: powerful lessons in personal change* (25th anniversary edition). Simon & Schuster.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Written Assessment: Written Assignment, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Written Assessment: Written Assignment, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Introduction to Academic Work

Module Code: DLBCSIAW

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Brigitte Huber (Introduction to Academic Work)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Introduction to Academic Work (DLBCSIAW01)

Module Exam Type	
Module Exam Study Format: myStudies Basic Workbook (passed / not passed) Study Format: Distance Learning Basic Workbook (passed / not passed)	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Scientific Theoretical Foundations and Research Paradigms
- Application of Good Scientific Practice
- Methodology
- Librarianship: Structure, Use, and Literature Management
- Forms of Scientific Work at IU

Learning Outcomes

Introduction to Academic Work

On successful completion, students will be able to

- understand and apply formal criteria of a scientific work.
- distinguish basic research methods and identify criteria of good scientific practice.
- describe central scientific theoretical basics and research paradigms and their effects on scientific research results.
- use literature databases, literature administration programs, and other library structures properly; avoid plagiarism; and apply citation styles correctly.
- apply the evidence criteria to scientific texts.
- define a research topic and derive a structure for scientific texts.
- compile a list of literature, illustrations, tables, and abbreviations for scientific texts.
- understand and distinguish between the different forms of scientific work at IU.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Methods	All Bachelor Programs in the Business field

Introduction to Academic Work

Course Code: DLBCSIAW01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The application of good scientific practice is one of the basic academic qualifications that should be acquired while studying. This course deals with the distinction between everyday knowledge and science. This requires a deeper understanding of the theory of science, as well as the knowledge of basic research methods and instruments for writing scientific texts. The students therefore gain initial insight into academic research and are introduced to the basic knowledge that will help them in the future to produce scientific papers. In addition, the students receive an overview of the different IU examination forms and insight into their requirements and implementation.

Course Outcomes

On successful completion, students will be able to

- understand and apply formal criteria of a scientific work.
- distinguish basic research methods and identify criteria of good scientific practice.
- describe central scientific theoretical basics and research paradigms and their effects on scientific research results.
- use literature databases, literature administration programs, and other library structures properly; avoid plagiarism; and apply citation styles correctly.
- apply the evidence criteria to scientific texts.
- define a research topic and derive a structure for scientific texts.
- compile a list of literature, illustrations, tables, and abbreviations for scientific texts.
- understand and distinguish between the different forms of scientific work at IU.

Contents

1. Theory of Science
   - 1.1 Introduction to Science and Research
   - 1.2 Research Paradigms
   - 1.3 Fundamental Research Decisions
   - 1.4 Effects of Scientific Paradigms on Research Design
2. Application of Good Scientific Practice
   - 2.1 Research Ethics
   - 2.2 Evidence Teaching

- 2.3 Data Protection and Affidavit
- 2.4 Orthography and Shape
- 2.5 Identification and Delimitation of Topics
- 2.6 Research Questions and Structure

3. Research Methods
   - 3.1 Empirical Research
   - 3.2 Literature and Reviews
   - 3.3 Quantitative Data Collection
   - 3.4 Qualitative Data Collection
   - 3.5 Mix of Methods
   - 3.6 Critique of Methods and Self-Reflection

4. Librarianship: Structure, Use, and Literature Management
   - 4.1 Plagiarism Prevention
   - 4.2 Database Search
   - 4.3 Literature Administration
   - 4.4 Citation and Author Guidelines
   - 4.5 Bibliography

5. Scientific Work at the IU – Research Essay
6. Scientific Work at the IU - Project Report
7. Scientific Work at the IU - Case Study
8. Scientific Work at the IU - Bachelor Thesis
9. Scientific Work at the IU – Oral Assignment
10. Scientific Work at the IU – Oral Project Report
11. Scientific Work at the IU - Colloquium
12. Scientific Work at the IU - Portfolio
13. Scientific Work at the IU - Exam

Literature
Compulsory Reading
Further Reading ▪ Bell, J., & Waters, S. (2018). Doing your research project: A guide for first-time researchers (7th ed.). Open University Press McGraw-Hill Education. ▪ Deb, D., Dey, R., & Balas, V. E. (2019). Engineering research methodology: A practical insight for researchers. Springer. ▪ Saunders, M., Lewis, P., & Thornhill, A. (2019). Research Methods for Business Students (8th ed.). Pearson. ▪ Veal, A. J. (2018). Research Methods for Leisure and Tourism (5th ed.). Pearson.

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Basic Workbook (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Basic Workbook (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Technical Drawing

Module Code: DLBROTD_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Hans Kerwat (Technical Drawing)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Technical Drawing (DLBROTD01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Technical drawing
- Descriptive geometry
- Design process
- Technical communication

Learning Outcomes

Technical Drawing

On successful completion, students will be able to

- formulate product ideas by creating technical drawings.
- read and interpret technical drawings.
- analyze design processes.
- optimize design processes.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology fields

Technical Drawing

Course Code: DLBROTD01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The content of this course focuses on reading, understanding and creating technical drawings. Students will be introduced to the fields of Engineering and Design. In addition, students will acquire basic knowledge in technical drawing and descriptive geometry. In doing so, they learn about the design and development process. The aim of this course is for students to understand the relevance of design in product development. They can analyze problems by reading drawings and will be able to formulate and create product ideas out of them.Technical drawing is the foundation for the description of technical products as well as technical communication and, thus, a basic qualification for engineering work.

Course Outcomes

On successful completion, students will be able to

- formulate product ideas by creating technical drawings.
- read and interpret technical drawings.
- analyze design processes.
- optimize design processes.

Contents

1. Illustration in Technical Drawings
   - 1.1 Sketches (by Hand)
   - 1.2 Axonometric Projection
2. Basics of Technical Drawing
   - 2.1 Types of Drawings
   - 2.2 Drawing Format
3. Views
   - 3.1 Three-Panel Projection
   - 3.2 Projection Methods (1 & 3)
   - 3.3 Cuts/Breakout
4. Dimensioning

4.1 Line Types
4.2 Dimensioning Rules

5. Surfaces
   5.1 Definition
   5.2 Illustration

6. Tolerances
   6.1 Dimensioning
   6.2 Standardized Fitting System
   6.3 Basic Shaft/Basic Hole
   6.4 Calculation of Tolerance Chains

7. Standards
   7.1 Classification of Standards
   7.2 Technical Drawing Standards
   7.3 Standard Parts

Literature

Compulsory Reading

Further Reading

- Henzold, G. (2006). Geometrical dimensioning and tolerancing for design, manufacturing and inspection (2nd ed.). Elsevier.
- Madsen, D. A., & Madsen, D. P. (2016). Engineering drawing and design (6th ed.). Cengage Learning.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Fundamentals of Physics

Module Code: DLBWINGP-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	None	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Christian Magnus (Fundamentals of Physics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Fundamentals of Physics (DLBWINGP01-01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Mechanics
- Thermodynamics
- Electricity and Magnetism
- Oscillations and Waves
- Optics & Acoustics
- Introduction to Particle Physics

Learning Outcomes

Fundamentals of Physics

On successful completion, students will be able to

- explain the basic concepts of mechanics and calculate the quantities of mechanics.
- explain the basic concepts of thermodynamics and calculate the quantities of thermodynamics.
- apply the physical laws of electricity to electrostatic and magnetic fields.
- explain free and forced oscillations and reproduce applications.
- explain phenomena of geometrical optics and wave optics.
- understand basic concepts of particle physics.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Fundamentals of Physics

Course Code: DLBWINGP01-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	None

Course Description

Basic principles of physics form the foundation of many engineering applications. The basic principles of mechanics, thermodynamics, and electricity, for example, are implemented in almost all technical products and are considered in their design. The course provides a broad overview of the fundamentals of physics starting from the axioms of mechanics, thermodynamic principles, electricity theory, vibration theory, optics and acoustics up to modern aspects of physics in the context of atomic physics and nuclear physics. Thus, the course provides students with an overview of the various subfields of physics and an introduction to scientific problem-solving techniques.

Course Outcomes

On successful completion, students will be able to

- explain the basic concepts of mechanics and calculate the quantities of mechanics.
- explain the basic concepts of thermodynamics and calculate the quantities of thermodynamics.
- apply the physical laws of electricity to electrostatic and magnetic fields.
- explain free and forced oscillations and reproduce applications.
- explain phenomena of geometrical optics and wave optics.
- understand basic concepts of particle physics.

Contents

1. Introduction
   - 1.1 Physics Overview
   - 1.2 Physical Quantities and Units
2. Mechanics
   - 2.1 Forces and Mechanics of Rigid Bodies
   - 2.2 Elastostatics
   - 2.3 The Basic Laws of Classical Mechanics
   - 2.4 Kinematics and Kinetics
   - 2.5 Momentum, Work, and Energy
   - 2.6 Fluid Mechanics

3. Thermodynamics
   - 3.1 Heat and Temperature
   - 3.2 First Law of Thermodynamics and Enthalpy
   - 3.3 Second Law of Thermodynamics and Entropy
   - 3.4 Kinetic Theory of Gases
   - 3.5 Heat: Conduction, Convection, and Radiation

4. Electricity and Magnetism
   - 4.1 Voltage, Current, and Resistance
   - 4.2 Analysis of Direct Current Networks
   - 4.3 Electrostatic Fields
   - 4.4 Magnetic Fields
   - 4.5 Alternating Current Quantities and Circuits

5. Vibration Theory and Waves
   - 5.1 Free Oscillations
   - 5.2 Forced Oscillations
   - 5.3 Waves
   - 5.4 Doppler Effect
   - 5.5 Interference

6. Optics & Acoustics
   - 6.1 Basic Terms
   - 6.2 Reflection and Refraction
   - 6.3 Ray Optics and Imaging Errors
   - 6.4 Wave Optics - Interference and Polarization
   - 6.5 Sound Waves - Fundamentals of Acoustics

7. Introduction to Particle Physics
   - 7.1 Atomic Models in Historical Overview
   - 7.2 The Periodic Table of Elements
   - 7.3 Quantum Optics
   - 7.4 Nuclear Fission and Fusion
   - 7.5 Radioactive Radiation and X-Rays

Literature
Compulsory Reading
Further Reading ▪ Knight, R. D. (2016). Physics for scientists and engineers : a strategic approach with modern physics. Pearson Education. ▪ Ohanian, H. C., Markert, J. T., & Ohanian, H. C. (2007). Physics for engineers and scientists (3rd ed.). W.W. Norton. ▪ Walker, J., Halliday, D., & Resnick, R. (2020). Halliday & Resnick's Principles of Physics (11th ed.). Wiley.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions	☑ Slides	☑ Online Tests

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions	☑ Slides	☑ Online Tests

Project: Business Model Development

Module Code: DLBEPPGE_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Lena Bernhofer (Project: Business Model Development)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Business Model Development (DLBEPPGE01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Oral Project Report	

Weight of Module

see curriculum

Module Contents

The course conveys the methodological principles of business model development as well as the design of different business models. By applying these methods, the students generate a business model for a self-developed or fictitious business idea.

Learning Outcomes

Project: Business Model Development

On successful completion, students will be able to

- define and differentiate between various business models.
- design several alternatives of business models for a self-developed or fictitious business project.
- verify the most promising alternative of the developed business models on the market using a market test.
- determine and calculate the revenue and success potential for the most relevant business models based on the results of the market test.
- select the business model with the greatest market and success potential.
- present the business model of the business idea and its success potential based on market feedback and analysis in a project presentation.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Planning & Controlling	All Bachelor Programs in the Business field

Project: Business Model Development

Course Code: DLBEPPGE01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students learn to develop different business models. In addition to teaching different business model alternatives, methods for business model development are conveyed. To apply this knowledge practically, different business model options for a self-developed or fictitious business project are designed by each student, the business model with the greatest market potential is selected and presented in a project presentation.

Course Outcomes

On successful completion, students will be able to

- define and differentiate between various business models.
- design several alternatives of business models for a self-developed or fictitious business project.
- verify the most promising alternative of the developed business models on the market using a market test.
- determine and calculate the revenue and success potential for the most relevant business models based on the results of the market test.
- select the business model with the greatest market and success potential.
- present the business model of the business idea and its success potential based on market feedback and analysis in a project presentation.

Contents

- The course will teach the methodical basics and procedures for developing a business model for a start-up. The students gain knowledge about relevant methods such as the Business Model Canvas, Business Model Navigator, Business Model Framework and the Scenario Technique and they learn how to apply these to their own or a fictitious business project. The phases for developing the business model for the business project are the identification and design of different business model types, validating the alternatives with the highest potential for success with a market test, calculating the revenue and success potential and, on this basis, selecting the best business model for the start-up. The success factors for a prosperous business model are conveyed and reflected directly through the application. The results will be presented and explained in the form of a project presentation, as it is usual for start-ups in form of so-called "investor pitches". The project presentations will include the basic procedure, the most relevant business model variants and the selected

business model with the calculation and presentation of the income and profit potential in the identified market. The developed business model should refer to a self-developed or fictitious business plan.

Literature
Compulsory Reading
Further Reading ▪ Blank, S./Dorf. B. (2018): The Startup Owner's Manual: The Step-By-Step Guide for Building a Great Company, John Wiley & Sons Verlag, New Jersey. ▪ Gassmann, O./Frankenberger, K./Csik, M. (2017): The Business Model Navigator: 55 Models That Will Revolutionise Your Business, Financial Times Prent., London. Osterwalder, A./ Pigneur, Y. (2014): Value Proposition Design: How to Create Products and Services Customers Want, John Wiley & Sons Verlag, New Jersey. ▪ Osterwalder, A./Pigneur, Y. (2010): Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers,John Wiley & Sons Verlag, New Jersey.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

2. Semester

Mathematics II

Module Code: DLBCSM2

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Annika Denkert (Mathematics II)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Mathematics II (DLBCSM201)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Selected topics of linear algebra
- Selected chapters on graphs and algorithms

Learning Outcomes

Mathematics II

On successful completion, students will be able to

- understand basic concepts of linear algebra, their interrelations, and their application in IT and technology and be able solve tasks independently using these concepts.
- understand and distinguish the basic concepts and important algorithms for graphs and trees from the field of discrete mathematics as well as their application in IT and technology.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Methods	All Bachelor Programs in the Business & Management field

Mathematics II

Course Code: DLBCSM201

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course continues the introduction to topics of discrete mathematics which began in the module "Mathematics Fundamentals I". In this course, the concepts of linear algebra are introduced and knowledge about graphs and algorithms for graphs is deepened. Typical questions of applied computer science are selected, and students are shown how they can be solved with graphs.

Course Outcomes

On successful completion, students will be able to

- understand basic concepts of linear algebra, their interrelations, and their application in IT and technology and be able solve tasks independently using these concepts.
- understand and distinguish the basic concepts and important algorithms for graphs and trees from the field of discrete mathematics as well as their application in IT and technology.

Contents

1. Introduction to Matrices
   - 1.1 Basic Concepts of Matrices
   - 1.2 Addition of Matrices
   - 1.3 Scalar Multiplication and Product
2. Inverting Matrices
   - 2.1 Multiplication of Matrices
   - 2.2 Properties of Matrix Multiplication
   - 2.3 Inverse Matrices
3. Linear Systems of Equations
   - 3.1 Gauss Algorithm
   - 3.2 Example Applications of the Gaussian Algorithm
4. Introduction to Graphs
   - 4.1 Undirected Graphs
   - 4.2 Further Properties of Graphs

4.3 Adjacency Matrix

5. The Problem of the Shortest Routes
   - 5.1 Directional Graph or Digraph
   - 5.2 Weighted Graph
   - 5.3 Dijkstra's Algorithm

6. The Königsberg Bridge Problem
   - 6.1 Routing in Graphs
   - 6.2 Eulerian Graph
   - 6.3 Hierholzer's Algorithm
   - 6.4 The Postman Problem

7. A City Tour Where Each City is Visited Exactly Once.
   - 7.1 Special Graphs
   - 7.2 Hamiltonian Graph
   - 7.3 The Ore and Dirac Condition
   - 7.4 The Problem of the Traveling Salesman

8. Trees
   - 8.1 Properties of Trees
   - 8.2 Root Tree
   - 8.3 Spanning Tree
   - 8.4 Minimal Spanning Tree

Literature

Compulsory Reading

Further Reading

- Benjamin, A., Chartrand, G., and Zhang, P. (2017). The fascinating world of graph theory. Princeton University Press.
- Erciyes, J. (2021). Discrete mathematics and graph theory: A concise study companion and guide. Princeton University Press.
- Lewis, H., & Zax, R. (2019). Essential discrete mathematics for computer science. Princeton University Press.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Project: Programming with C/C++

Module Code: DLBROEPRS1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Hajck Karapetjan (Project: Programming with C/C++)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Programming with C/C++ (DLBROEPRS01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Portfolio Study Format: Distance Learning Portfolio	

Weight of Module

see curriculum

Module Contents

- C and C++ for programming of applications and robots

Learning Outcomes	
Project: Programming with C/C++ On successful completion, students will be able to ▪ know the main characteristics of C and C++ programming languages. ▪ apply C and C++ for programming of applications. ▪ apply C and C++ for programming of robotic systems.	
Links to other Modules within the Study Program This module is similar to other modules in the fields of Computer Science & Software Development	**Links to other Study Programs of the University** All Bachelor Programmes in the IT & Technology fields

Project: Programming with C/C++

Course Code: DLBROEPRS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

C and C++ belong to the class of programming languages which have been adopted in a broad field of applications, ranging from embedded systems (where they are dominant) to fast and reliable user interfaces and industrial applications. In fact, C++ is one of the most popular legacy programming languages for robotics, and a combination of C++ and robotics hardware is used in many leading industries. Knowledge on how to design in and write C/C++ code is an imperative capability for the practicing roboticist, especially in the industrial arena.

Course Outcomes

On successful completion, students will be able to

- know the main characteristics of C and C++ programming languages.
- apply C and C++ for programming of applications.
- apply C and C++ for programming of robotic systems.

Contents

- This course introduces the main aspects of C and C++ programming languages, such as data types, variables, arithmetic expressions, flow control, functions, classes, arrays, and pointers. The programming skills will then be applied to design parts of robotic systems based on popular hardware.

Literature

Compulsory Reading

Further Reading

- Kernighan, B. W. & Ritchie, D. M. (2000). The C Programming Language, Second Edition. Pearson Education.
- Lippman, S. B., Lajoie, J., Moo, B. (2012). C++ Primer, Fifth Edition. Addison Wesley.
- Margolis, M. (2011). Arduino Cookbook. O'Reilly Media.
- Dogan, I. (2021). Nucleo Boards Programming with the STM32CubeIDE. Elektor.

Study Format myStudies

Study Format	**Course Type**
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Portfolio

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Portfolio

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Accounting and Balancing

Module Code: DLBEPEAB

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Andreas Simon (Accounting and Balancing)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Accounting and Balancing (DLBEPEAB01)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes Study Format: Duales myStudium Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Balance Sheet, Income Statement, Statement of Cash Flows
- IFRS Financial Statement of Small and Medium Sized Entities
- Recognition and Measurement Rules for IFRS Financial Reports
- Accounting Equation and Ratio Analysis
- Accrual Basis of Accounting and Revenue Recognition Rules
- Debt and Equity Financing of The Firm

Learning Outcomes

Accounting and Balancing

On successful completion, students will be able to

- explain how business activities are captured by financial statements and prepare financial statements from these business events.
- understand the objectives of financial reporting, analyze financial statements, compute key ratios.
- compare and contrast the objectives, characteristics and principles of IFRS reporting in an international context and compare them to national accounting principles (HGB).
- describe IFRS standards as they relate to the recognition, measurement, presentation and disclosure requirements in general purpose financial statements.
- apply accounting knowledge to solve business problems and make informed business decisions.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Finance & Tax Accounting	All Bachelor Programs in the Business field

Accounting and Balancing

Course Code: DLBEPEAB01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The knowledge obtained in this class will provide you with an important set of tools that are vital for anyone who will be expected to use financial statements in a meaningful way, and make key managerial decisions particularly with respect to the start-up of an enterprise. Procedural aspects of financial accounting will be discussed in order to enhance your understanding of the content of the financial statements. However, the emphasis of the class is on analyzing the financial condition of an operating company and to make recommendations to the management for improvements.

Course Outcomes

On successful completion, students will be able to

- explain how business activities are captured by financial statements and prepare financial statements from these business events.
- understand the objectives of financial reporting, analyze financial statements, compute key ratios.
- compare and contrast the objectives, characteristics and principles of IFRS reporting in an international context and compare them to national accounting principles (HGB).
- describe IFRS standards as they relate to the recognition, measurement, presentation and disclosure requirements in general purpose financial statements.
- apply accounting knowledge to solve business problems and make informed business decisions.

Contents

1. Financial Accounting as Information Source
    - 1.1 Business activities and the role of accounting
    - 1.2 Basic financial statements
    - 1.3 Key ratios
2. General Accounting Principles
    - 2.1 Conceptual Framework under IFRS
    - 2.2 IFRS for SMEs
    - 2.3 BilMog and HGB in Germany

3. Measuring Performance: Income Statement and Statement of Cash Flow
   - 3.1 Accrual accounting
   - 3.2 Income statement
   - 3.3 Statement of cash flow
   - 3.4 Revenue recognition

4. Reporting and Analysing Assets: Balance Sheet
   - 4.1 Definition of Assets
   - 4.2 Inventory
   - 4.3 Property, plant & equipment
   - 4.4 Intangible assets

5. Reporting and Analysing Liabilities and Equity: Balance Sheet
   - 5.1 Definition of Liabilities and Equity
   - 5.2 Accounting for debt financing
   - 5.3 Accounting for contributed and earned capital

6. Financial Statement Analysis
   - 6.1 Horizontal and vertical Ratio Analysis
   - 6.2 Analysing profitability, liquidity, and solvency
   - 6.3 Using Accounting Information in Valuation

7. Accounting Illustrated – case study
   - 7.1 Application of Accounting principles
   - 7.2 Analysis of Accounting Information
   - 7.3 Recommendations based on Accounting Information

Literature

Compulsory Reading

Further Reading

- Harrison, Walter T., et al. (2017): Financial Accounting. Global Edition, Pearson Education Limited.
- Stittle, John, and Robert T Wearing (2008): Financial Accounting. SAGE Publications.
- Van, Horne, J., et al. (2008): Fundamentals of Financial Management. Pearson Education, Limited.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
	☑ Audio	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions	☑ Audio	☑ Online Tests
	☑ Slides	

Study Format Duales myStudium

Study Format	**Course Type**
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
	☑ Audio	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Marketing I

Module Code: BMAR1-02_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	3	90 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Konstantinos Kalligiannis (Marketing I)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Marketing I (BMAR01-02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Fundamentals of Marketing
- Product Policy Decisions
- Communication Policy Decisions
- Pricing Policy Decisions
- Distribution Policy Decisions

Learning Outcomes

Marketing I

On successful completion, students will be able to

- outline basic concepts and fundamentals in marketing.
- explain the terms brand management and positioning.
- distinguish between the marketing tools (4 Ps).
- understand the relationship between the marketing mix instruments.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Marketing & Sales	All Bachelor Programs in the Marketing & Communication field

Marketing I

Course Code: BMAR01-02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		3	none

Course Description

The aim of the course is to provide students with the central marketing concepts and terms of operative marketing. They will gain an insight into the different approaches of marketing in the company and become familiar with the management of products and brands as well as with the concept of positioning in the market. The course teaches students the basic tools of marketing using the marketing mix instruments. The four elements of the marketing mix will be discussed in detail, i.e., product, communication, pricing and distribution policy decisions. The relationship and interaction of the individual elements will be illustrated by company cases. The students learn that the success of a product depends on a consistent and consequent implementation of the single elements in operative marketing.

Course Outcomes

On successful completion, students will be able to

- outline basic concepts and fundamentals in marketing.
- explain the terms brand management and positioning.
- distinguish between the marketing tools (4 Ps).
- understand the relationship between the marketing mix instruments.

Contents

1. Basic Concepts of Marketing
   - 1.1 Central Terminology
   - 1.2 Brand Management, Positioning and Competitive Strategies
   - 1.3 Marketing Management
2. Product Policy Decisions
   - 2.1 Terms of Product Policy Decisions
   - 2.2 Product Policy Decisions
   - 2.3 Innovation Management
3. Communication Policy Decisions
   - 3.1 Integrated Marketing Communications
   - 3.2 Mass Media Communication Tools

3.3 Interpersonal Communication Tools

4. Pricing Policy Decisions
   - 4.1 The Role of Pricing Policy Decisions in Marketing
   - 4.2 Pricing Strategies
   - 4.3 Determining Prices and Conditions

5. Distribution Policy Decisions
   - 5.1 Basic Concepts of Distribution Policy Decisions
   - 5.2 Vertical Design of the Distribution System
   - 5.3 Horizontal Design of the Distribution System

Literature

Compulsory Reading

Further Reading

- Blythe, J. (2006): Essentials of Marketing Communications. 3rd edition, Prentice Hall, Upper
- Blythe, J. (2012): Essentials of Marketing. 5th edition, Pearson, London.
- Egan, J. (2015): Marketing Communications. 2nd edition, SAGE, Thousand Oaks (CA).
- Kotler, P./Keller, K.L./Chernev, A.(2021): Marketing Management. 16th edition, Pearson, London.
- Simon, H./Fassnacht, M. (2019): Price Management. Strategy, Analysis, Decision, Implementation. 4th edition, Springer Gabler, Heidelberg.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
54 h	0 h	18 h	18 h	0 h	90 h

Instructional Methods

Tutorial Support
☑ Course Feed
☑ Intensive Live Sessions/Learning Sprint
☑ Recorded Live Sessions

Learning Material
☑ Course Book
☑ Video

Exam Preparation
☑ Practice Exam
☑ Online Tests

Marketing II

Module Code: BMAR2-02_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	BMAR01-02_E	BA	2	60 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Stefan Wiesmann (Marketing II)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Marketing II (BMAR02-02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Basics of Consumer Behavior Research
- Marketing Message
- Purchase Decision Models
- Market Research and Segmentation
- Customer Satisfaction

Learning Outcomes

Marketing II

On successful completion, students will be able to

- understand the importance of consumer behavior.
- outline the purchase decision process and the factors influencing this process.
- critically evaluate the topic of customer segmentation.
- comprehend customer satisfaction and customer loyalty.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Marketing & Sales	All Bachelor Programs in the Marketing & Communication field

Marketing II

Course Code: BMAR02-02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		2	BMAR01-02_E

Course Description

The aim of the course is to gain a deeper understanding of consumer behavior. Students will learn the basic concepts of consumer behavior research. The course explores different purchase decision models and examines the factors of conditioning, information processing and effects of emotions that significantly influence purchase decisions. Again, real-world examples are used to link theory and practice. The topic of market segmentation will be explored in detail in the context of market research. Here, students become familiar with the most important instruments and methods. Other important topics of marketing are customer satisfaction and customer loyalty, which are closely related.Customer expectations and various measures for customer loyalty will be presented and further analyzed.

Course Outcomes

On successful completion, students will be able to

- understand the importance of consumer behavior.
- outline the purchase decision process and the factors influencing this process.
- critically evaluate the topic of customer segmentation.
- comprehend customer satisfaction and customer loyalty.

Contents

1. Basic Approaches of Consumer Behavior Research
   - 1.1 Introduction to Consumer Behavior Research
   - 1.2 B2C versus B2B Purchasing
   - 1.3 Theoretical Framework
2. Consumers and the Marketing Message
   - 2.1 Activating Processes
   - 2.2 Cognitive Processes
   - 2.3 Environmental Moderators
3. Purchase Decision Models
   - 3.1 The Purchase Decision Process
   - 3.2 Types of Purchase Decisions

3.3 Purchase Decision Making

4. Market Research and Segmentation
   - 4.1 Introduction to Market Research
   - 4.2 Market Research Design and Instruments
   - 4.3 Segmentation Methods

5. Customer Satisfaction
   - 5.1 The Concept of Customer Satisfaction
   - 5.2 Customer Loyalty
   - 5.3 Relationship Marketing

Literature

Compulsory Reading

Further Reading

- Babin, B. J., & Harris, E. G. (2015). Consumer Behavior (7th ed.). South-Western/Cengage.
- Hoyer, W. D., MacInnis, D. J., & Pieters, R. (2018). Consumer Behavior (7th ed.). Cengage Learning.
- Sethna, Z., & Blythe, J. (2016). Consumer Behavior (3rd ed.). SAGE.
- Solomon, M. R. (2014). Consumer Behavior: Buying, Having, and Being (11th ed.). Prentice Hall.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
36 h	0 h	12 h	12 h	0 h	60 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

Project: Design with CAD

Module Code: DLBROPDCAD_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	DLBROTD01_E	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Christian Magnus (Project: Design with CAD)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Design with CAD (DLBROPDCAD01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Oral Project Report	

Weight of Module

see curriculum

Module Contents

In this design project students will apply their acquired skills by means of Computer Aided Design (CAD).

Learning Outcomes **Project: Design with CAD** On successful completion, students will be able to ▪ create complex components in CAD. ▪ design components. ▪ create assemblies. ▪ review assembly and functionality (Digital Twin).	
Links to other Modules within the Study Program This module is similar to other modules in the field of Engineering	**Links to other Study Programs of the University** All Bachelor Programs in the IT & Technology fields

Project: Design with CAD

Course Code: DLBROPDCAD01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	DLBROTD01_E

Course Description

Participants of this course have already acquired knowledge of basic contents of computer-aided design. This course is intended to help consolidate what has been learned from brainstorming over conceptualizing to practical application.Through the application of practical exercises using CAD, students connect and implement the modules of a CAD process chain and their individual functions. In this way, students gain an insight into the problems frequently encountered in the practice of engineering.

Course Outcomes

On successful completion, students will be able to

- create complex components in CAD.
- design components.
- create assemblies.
- review assembly and functionality (Digital Twin).

Contents

- In this course students develop their own design ideas from scratch. A task with certain conditions is assigned, on the basis of which students will develop their mechanical design. For this purpose, students will use these common methods of mechanical design.
  - Creation of a requirement and specification sheet
  - brainstorming (e.g. morphological box/pairwise comparison/utility analysis)
  - design in CAD
  - Documentation in the form of a technical report

Literature

Compulsory Reading

Further Reading

- Haberhauer, H./Bodenstein, F. (2014): Maschinenelemente. Gestaltung, Berechnung, Anwendung. 17. Auflage, Springer Vieweg, Berlin.
- Niemann, G. et al. (2019): Maschinenelemente 1. Konstruktion und Berechnung von Verbindungen, Lagern, Wellen. 5. Auflage, Springer Vieweg, Berlin.
- Niemann, G./Neumann, B./Winter, H. (1983): Maschinenelemente. Band 3. 2. Auflage, Springer-Verlag, Berlin.
- Niemann, G./Winter, H. (2003): Maschinenelemente. Band 2. Getriebe allgemein, Zahnradgetriebe – Grundlagen, Stirnradgetriebe. 2. Auflage, Springer, Berlin.
- Rieg, F./Steinhilper, R. (2018): Handbuch Konstruktion. 2. Auflage, Carl Hanser, München.
- Schlecht, B. (2009): Maschinenelemente 2. 2. Auflage, Pearson Verlag, München.
- Schlecht, B. (2015): Maschinenelemente 1. 2., aktualisierte Auflage, Pearson Verlag, München.
- Vajna, S. et al. (2018): CAx für Ingenieure. Eine praxisbezogene Einführung. 3. Auflage, Springer Vieweg, Wiesbaden.
- Wittel, H. et al. (2013): Roloff/Matek. Maschinenelemente. 21. Auflage, Springer Vieweg, Berlin.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint	☑ Slides	☑ Guideline

3. Semester

Electrical Engineering

Module Code: DLBINGET-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Aiko Walte (Electrical Engineering)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Electrical Engineering (DLBINGET01-01_E)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Basic Terms
- Introduction to Direct Current Technology
- Calculation of Direct Current Networks
- Electric Fields
- Introduction to Alternating Current Technology
- Calculation of Alternating Current Networks
- Locus Curves
- Transformers
- Multiphase Systems
- Transient Response

Learning Outcomes

Electrical Engineering

On successful completion, students will be able to

- know the basic terms of electrical engineering.
- calculate DC (direct current) circuits and networks.
- know the different types of electrical fields.
- calculate AC (alternating current) circuits and networks.
- know methods for the construction of root locus curves.
- know the basic structure of different types of transformers.
- calculate equivalent circuit diagrams with transformers.
- know multiphase systems and can distinguish them from single-phase systems.
- measure performance in a three-phase system.
- calculate the transient response with the Laplace transformation.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology field

Electrical Engineering

Course Code: DLBINGET01-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The aim of the course is to offer students a broad insight into the basics of electrical engineering. First of all, the basic terms of electrical engineering and the relevant physical quantities are introduced. This is followed by two comprehensive sectionson direct current and alternating current technology. They are first briefly introduced using their essential elements and properties and then supplemented by methods for calculating the respective circuits and networks. Based on this, multi-phase systems and their application in public power supply are presented. The course concludes with a consideration of the transient response and its calculation using the Laplace transformation.

Course Outcomes

On successful completion, students will be able to

- know the basic terms of electrical engineering.
- calculate DC (direct current) circuits and networks.
- know the different types of electrical fields.
- calculate AC (alternating current) circuits and networks.
- know methods for the construction of root locus curves.
- know the basic structure of different types of transformers.
- calculate equivalent circuit diagrams with transformers.
- know multiphase systems and can distinguish them from single-phase systems.
- measure performance in a three-phase system.
- calculate the transient response with the Laplace transformation.

Contents

1. Basic Terms
   - 1.1 Charge, Electric Fields and Voltage
   - 1.2 Current and Resistance
   - 1.3 Electrical Energy and Power

2. Introduction to Direct Current Technology
   - 2.1 Kirchhoff's Laws
   - 2.2 Calculation of Series and Parallel Connections
   - 2.3 Voltage and Current Divider Rule

3. Calculation of Direct Current Networks
   - 3.1 Mesh-Current and Node-Voltage Method
   - 3.2 Superposition Method
   - 3.3 Wye-Delta Transformation of Circuits
   - 3.4 Examples

4. Introduction to Alternating Current Technology
   - 4.1 Electrostatic and Magnetic Fields
   - 4.2 Capacitor and Inductor
   - 4.3 Alternating Variables and their Calculation
   - 4.4 Network Analysis with Complex-Valued Variables

5. Calculation of Alternating Current Networks
   - 5.1 Simple AC Circuits and their Calculation
   - 5.2 Power Types in the AC Circuit
   - 5.3 Oscillating Circuits
   - 5.4 Examples

6. Root Locus Curves
   - 6.1 The Root Locus Concept
   - 6.2 Construction of Various Root Locus Curves
   - 6.3 Examples

7. Transformers
   - 7.1 Basic Functionality
   - 7.2 Equivalent Circuit Diagram
   - 7.3 Measurement Methods

8. Multiphase Systems
   - 8.1 Three-Phase Current Technology (Three-Phase Systems)
   - 8.2 Power Measurement in Three-Phase Systems

9. Transient Response
   - 9.1 Description of Time Dependent Processes with Differential Equations
   - 9.2 Setting up Differential Equations of Electrical Circuits
   - 9.3 Introduction to the Laplace Transformation
   - 9.4 Calculation of Transient Response

Literature
Compulsory Reading
Further Reading ▪ Dossis, N. (2013). Basic electronics for tomorrow's inventors. McGraw-Hill. ▪ Herrick, C. N. (1997). Basic electronics math. Newnes. ▪ Nilsson, J. W. & Riedel, S. (2019). Electric circuits (11th ed.). Pearson. ▪ Narayana Rao, B. Y., & Anand, K. (2010). Electronics. Himalaya Publishing House. ▪ Tayal, D. C. (2010). Basic electronics. Himalaya Publishing House.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions	☑ Slides	☑ Online Tests

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions	☑ Slides	☑ Online Tests

Production Engineering Industry 4.0

Module Code: DLBDSEAR1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Hans Kerwat (Production Engineering Industry 4.0)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Production Engineering Industry 4.0 (DLBDSEAR01)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Introduction to Manufacturing Technology
- Main Production Groups According to DIN 8580
- Additive Manufacturing Processes
- Rapid Prototyping
- Rapid Tooling
- Direct/Rapid Manufacturing
- Cyber-Physical Production Plants

Learning Outcomes

Production Engineering Industry 4.0

On successful completion, students will be able to

- understand the basic concepts and interrelationships of production engineering.
- understand current changes in manufacturing technology due to technologies such as additive manufacturing and megatrends such as cyber physical systems.
- assign different manufacturing processes to the main manufacturing groups according to DIN 8580.
- understand the basic principle of additive manufacturing processes.
- distinguish between different additive manufacturing processes.
- understand the terms Rapid Prototyping, Rapid Tooling, and Direct Manufacturing and name individual processes and application examples.
- understand the elements and properties of cyber-physical production plants.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Production Engineering Industry 4.0

Course Code: DLBDSEAR01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The aim of the course is to provide students with an overview of the processes that have influenced and still influence production processes through technological developments under the generic term Industry 4.0, based on traditional, standardized manufacturing techniques. These include, in particular, technological advances in additive manufacturing processes that enable applications such as rapid prototyping, rapid tooling, and direct manufacturing. Finally, the course deals with the consequences of the digitalization and networking of production facilities and their elements in the sense of a cyber-physical system.

Course Outcomes

On successful completion, students will be able to

- understand the basic concepts and interrelationships of production engineering.
- understand current changes in manufacturing technology due to technologies such as additive manufacturing and megatrends such as cyber physical systems.
- assign different manufacturing processes to the main manufacturing groups according to DIN 8580.
- understand the basic principle of additive manufacturing processes.
- distinguish between different additive manufacturing processes.
- understand the terms Rapid Prototyping, Rapid Tooling, and Direct Manufacturing and name individual processes and application examples.
- understand the elements and properties of cyber-physical production plants.

Contents

1. Introduction to Manufacturing Technology
    - 1.1 Basic Terms and Contexts in Manufacturing Theory
    - 1.2 Historical Development of Production
    - 1.3 The Discussion About the Long Tail
2. Classification Of Manufacturing Processes
    - 2.1 Casting and Molding
    - 2.2 Forming
    - 2.3 Machining
    - 2.4 Joining

- 2.5 Coating
- 2.6 Changing the Properties of Substances

3. Additive Manufacturing Processes
   - 3.1 Basic Principles and Legal Aspects
   - 3.2 Stereolithography (STL)
   - 3.3 Selective Laser Sintering and Selective Beam Melting With Laser or Electron Beam
   - 3.4 Fused Deposition Modeling (FDM)
   - 3.5 Multi-Jet Modeling (MJM) and Poly-Jet Process (PJM)
   - 3.6 3D Printing Process (3DP)
   - 3.7 Laminating Processes
   - 3.8 Mask Sintering

4. Rapid Prototyping
   - 4.1 Definition
   - 4.2 Strategic and Operational Aspects
   - 4.3 Application Areas and Examples

5. Rapid Tooling
   - 5.1 Definition, Strategic, and Operational Aspects
   - 5.2 Indirect and Direct Procedures

6. Direct/Rapid Manufacturing
   - 6.1 Potentials and Requirements for Procedures
   - 6.2 Implementation, Application Areas, and Examples

7. Cyber-Physical Production Plants
   - 7.1 Derivation of the Terms Industry 4.0 and Cyber-Physical Systems
   - 7.2 Megatrend Cyber Physical Systems (CPS)
   - 7.3 Definition Cyber-Physical Production Plant
   - 7.4 Effects on Planning and Operation of Production Facilities
   - 7.5 Dynamic Reconfiguration and Migration of Production Facilities

Literature
Compulsory Reading
Further Reading ▪ Anderson, C. (2012). Makers: The new industrial revolution. Crown Business. ▪ Gebhardt, A., Kessler, J. & Thurn, L. (2019). 3D printing: Understanding additive manufacturing (2nd ed). Hanser. ▪ Groover, M. P. (2012). Fundamentals of modern manufacturing: Materials, processes, and systems (5th ed.). Wiley.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Practice Exam
- ☑ Online Tests

Handling Technology

Module Code: DLBROEIRA1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Handling Technology)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Handling Technology (DLBROEIRA01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Industrial Handling
- Delivery Systems
- End Effector/Manipulator/Gripper
- Material Flow

Learning Outcomes

Handling Technology

On successful completion, students will be able to

- assign terms and elements to conventional and flexible automated handling and assembly technology.
- analyze processes in handling.
- design methods for the development of assembly and handling tasks.
- influence component design through analysis, so that production-ready design can commence in the course of the construction phase.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Handling Technology

Course Code: DLBROEIRA01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In handling, a defined orientation of a geometrically defined object is either created or maintained for a limited time. Typical handling devices, such as industrial robots or handling devices, are program-controlled.This course provides an overview of the standards of conventional handling technology. In addition, the knowledge of flexible handling technology is deepened, with a focus on characteristic pick and place applications and Gripper / Manipulator / Endeffector technology.

Course Outcomes

On successful completion, students will be able to

- assign terms and elements to conventional and flexible automated handling and assembly technology.
- analyze processes in handling.
- design methods for the development of assembly and handling tasks.
- influence component design through analysis, so that production-ready design can commence in the course of the construction phase.

Contents

1. Introduction
   - 1.1 Definitions
   - 1.2 Requirements

2. Handling Objects
   - 2.1 Component Regulations
   - 2.2 Component Actions (Stability/Movement Sequences)
   - 2.3 Handling-Oriented Component Design
   - 2.4 Design for manufacturing and assembly

3. Handling Procedures
   - 3.1 Functions
   - 3.2 Illustrations
   - 3.3 Functional Diagrams

4. Standard and Delivery Systems
   - 4.1 Memory
   - 4.2 Motion Systems
   - 4.3 Delivery
   - 4.4 Branching
   - 4.5 Sorting
   - 4.6 Allocation
   - 4.7 Safety Equipment
   - 4.8 Control Systems

5. Flexible Handling Technology
   - 5.1 Tasks and Types (IR, Cobot)
   - 5.2 Pick and Place
   - 5.3 Drives
   - 5.4 Gripper technology

6. Transfer Systems
   - 6.1 Workpiece Carrier
   - 6.2 Chaining

7. Security
   - 7.1 Technical Safety Requirements
   - 7.2 Malfunction During Operation

Literature

Compulsory Reading

Further Reading

- Annals of Scientific Society for Assembly, Handling and Industrial Robotics 2021. (2022). Springer Nature.
- Khatib, O., & Siciliano, B. (2016). Springer handbook of robotics (2nd edition). Springer.
- Stephens, Matthew P. (2019). Manufacturing Facilities Design & Material Handling; Sixth Edition. Purdue University Press
- Schütz, Daniel/Wahl, Friedrich M. (2011). Robotic Systems for Handling and Assembly. (2011). Springer Tracts in Advanced Robotics. Berlin Heidelberg.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Seminar: Current Topics in Engineering Ecology

Module Code: DLBWINGSATI_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
N.N. (Seminar: Current Topics in Engineering Ecology)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Seminar: Current Topics in Engineering Ecology (DLBWINGSATI01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Written Assessment: Research Essay	**Split Exam**
Weight of Module see curriculum	

Module Contents

In this course, students examine the relevance of ecological issues in an engineering context. They address current challenges and solution approaches in the areas of sustainable energy supply, resource efficiency, and environmentally friendly production processes. They also learn methods for evaluating the ecological impact of technical projects, such as life cycle assessment (LCA) and ecological footprint models.

Learning Outcomes

Seminar: Current Topics in Engineering Ecology

On successful completion, students will be able to

- investigate the relevance of ecological issues in an engineering context.
- analyze current challenges and approaches to solutions in the areas of sustainable energy supply, resource efficiency, and environmentally friendly production processes.
- apply methods and tools for evaluating the ecological impact of technical projects, such as life cycle analysis (LCA) and ecological footprint models.
- discuss ecological innovations and their integration into economic models.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Seminar: Current Topics in Engineering Ecology

Course Code: DLBWINGSATI01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

At a time when the climate crisis and associated resource scarcity are among the most pressing global challenges, integrating ecological considerations into engineering processes is becoming increasingly important. Students have the opportunity to engage deeply with current challenges in sustainable energy supply and resource efficiency to develop sustainable solutions, thereby contributing to the transformation to a sustainable manufacturing industry. They learn to identify and evaluate ecological issues in technical projects and develop a deep understanding of methods such as life cycle assessment and ecological footprint modeling. Through discussions of ecological innovations and their economic integration, students are empowered to make future-oriented and responsible decisions.

Course Outcomes

On successful completion, students will be able to

- investigate the relevance of ecological issues in an engineering context.
- analyze current challenges and approaches to solutions in the areas of sustainable energy supply, resource efficiency, and environmentally friendly production processes.
- apply methods and tools for evaluating the ecological impact of technical projects, such as life cycle analysis (LCA) and ecological footprint models.
- discuss ecological innovations and their integration into economic models.

Contents

- The aim of the course is to examine the relevance of ecological issues in an engineering context and evaluate possible solutions. It addresses current challenges and solution approaches in the areas of sustainable energy supply, resource efficiency, and environmentally friendly production processes. Students familiarize themselves with methods and tools for evaluating the ecological impact of technical projects, such as life cycle analysis (LCA) and ecological footprint models. Furthermore, ecological innovations and their integration into economic models are discussed.

Literature

Compulsory Reading

Further Reading

- Calle Müller, C., Pradhananga, P., & ElZomor, M. (2024). Pathways to decarbonization, circular construction, and sustainability in the built environment. International Journal of Sustainability in Higher Education, 25(6), 1315–1332.
- Curran, M. A. (2018). Michael Z. Hauschild, Ralph K. Rosenbaum, and Stig Irvin Olsen (eds): Life cycle assessment—Theory and practice. The International Journal of Life Cycle Assessment, 23(7), 1517–1519.
- Date, G., & Chandrasekharan, S. (2024). Adapting engineering design thinking for sustainability. International Journal of Technology and Design Education, 1–39.
- Melles, G. B., & Wölfel, C. (2024). Design for a sustainable circular economy [Electronic resource]: Research and practice consequences.
- Mitsch, W. J., & Jørgensen, S. E. (2003). Ecological engineering and ecosystem restoration. John Wiley & Sons.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods	
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Exam Preparation** ☑ Guideline

Project: Agile Project Management

Module Code: DLBCSAPM

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Inga Schlömer (Project: Agile Project Management)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Agile Project Management (DLBCSAPM01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Written Assessment: Project Report Study Format: Distance Learning Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

- In this course, students are taught action competences in the field of agile project management. They will be familiarized with the values, activities, roles, and artifacts of agile procedures using Scrum as an example.

Learning Outcomes

Project: Agile Project Management

On successful completion, students will be able to

- explain the differences between agile and plan-driven project management.
- explain agile principles.
- work together in an agile manner according to the values defined in Scrum.
- apply the activities defined in Scrum.
- take responsibility for the roles defined in Scrum.
- create and maintain the artefacts defined in Scrum.
- consider the increasing relevance of international, intercultural and virtual collaboration in projects.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Agile Project Management

Course Code: DLBCSAPM01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Students will receive a practical introduction to agile project management in this course. In addition to teaching its individual basic principles, the differences between agile project management and plan-driven project management will be examined in detail. In order to understand and experience agile project management, the values, activities, roles, and artefacts of typical agile procedures are presented using Scrum and then practiced on an example project.

Course Outcomes

On successful completion, students will be able to

- explain the differences between agile and plan-driven project management.
- explain agile principles.
- work together in an agile manner according to the values defined in Scrum.
- apply the activities defined in Scrum.
- take responsibility for the roles defined in Scrum.
- create and maintain the artefacts defined in Scrum.
- consider the increasing relevance of international, intercultural and virtual collaboration in projects.

Contents

- This course teaches students various skills in the field of agile project management. In contrast to plan-driven project management, the principles of agility used in modern software development are taught. Using the example of Scrum, students will acquire skills in applying an agile approach, and then apply their knowledge of respective roles and activities in a simple project to gain initial practical experience, documenting it in a project report. The content of the projects results from the individual abilities and requirements of the students.

Literature

Compulsory Reading

Further Reading

- Apress. Agile Alliance (2021). Subway Map to Agile Practices.
- Beck, K. et al. (2001). Manifesto for Agile Software Development.
- Chovanova, H. et al. (2020). Agile Project Management – What is It? Publisher: IEEE. In 18th International Conference on Emerging eLearning Technologies and Applications (ICETA), Emerging eLearning Technologies and Applications (ICETA), 2020 18th International Conference.
- Dalton, Jeff (2019). Great Big Agile. An OS for Agile Leaders.
- Douglass, B. P. (2016). Agile systems engineering. Morgan Kaufmann, p. 151-160.
- Hohl, P., Klünder, J., van Bennekum, A., Lockard, R., Gifford, J., Münch, J., Stupperich, M., & Schneider, K. (2018). Back to the future: origins and directions of the "Agile Manifesto" – views of the originators. Journal of Software Engineering Research and Development, 6(1).
- Project Management Institute (2017). Agile Practice Guide. Project Management Institute.
- Measey P., Radtac (2015). Agile Foundations - Principles, Practices and Frameworks. BCS The Chartered Institute for IT, p. 131-140, p. 148-152.
- Schwaber, K., Sutherland, J. (2020). The Scrum Guide.
- Hohl, P., Klünder, J., van Bennekum, A., Lockard, R., Gifford, J., Münch, J., Stupperich, M., & Schneider, K. (2018). Back to the future: origins and directions of the "Agile Manifesto" – views of the originators. Journal of Software Engineering Research and Development, 6(1).

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

4. Semester

Digital Business Models

Module Code: DLBLODB_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Muhammad Ashfaq (Digital Business Models)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Digital Business Models (DLBLODB01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam or Advanced Workbook, 90 Minutes Study Format: myStudies Exam or Advanced Workbook, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Meaning, origin and definition of the term "digital business model”
- Basic concepts for the description of business models
- Tools for the description of business models
- Patterns of digital business models
- Digital business models and business plans

Learning Outcomes

Digital Business Models

On successful completion, students will be able to

- understand what a business model is and how to describe it systematically.
- outline the basic features of the historical development of business models.
- describe key digital business models and evaluate their advantages and disadvantages.
- establish the relationship between a business model and a business plan to independently derive and analyse the positioning of a company.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the Business Administration and Management field	All Bachelor Programmes in the Business field

Digital Business Models

Course Code: DLBLODB01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

A business model contains the depiction of the logic of how a company generates, delivers and secures value. The progressing digitalization of many processes, products and services has made possible a large number of innovations in the area of business models in recent years. The subject of this course rounds up the presentation, the underlying patterns and the main factors that influence these digital business models.Starting from a general definition of the concept of a business model, a system is developed to describe the essential factors of a business model. An overview of the historical development of important business models and in particular the influence of digitization on newer business models allows a classification of the concept and an understanding of the framework.Then the most important alternative digital business models of recent years are systematically presented, analyzed and evaluated with regard to their respective strengths and weaknesses.Finally, the role of business models in the creation process of a business plan is described. Students learn the central approaches to developing an independent corporate positioning and are enabled to examine and evaluate the central factors influencing corporate success in digital business.

Course Outcomes

On successful completion, students will be able to

- understand what a business model is and how to describe it systematically.
- outline the basic features of the historical development of business models.
- describe key digital business models and evaluate their advantages and disadvantages.
- establish the relationship between a business model and a business plan to independently derive and analyse the positioning of a company.

Contents

1. Meaning, Origin and Definition of the Term "Digital Business Model
   - 1.1 Goals and Functions of Digital Business Models
   - 1.2 Business Model - Origin of the Term and its Meaning in the Digital Economy
   - 1.3 Definition of the terms Business Model and Digital Business Model
   - 1.4 Differentiation from Other Terminologies of the Digital Economy
2. Basic Concepts for the Description of Business Models
   - 2.1 Value Chain by Porter

2.2 Value-added Chain
2.3 Dominant Logic
2.4 Revenue Model
2.5 Unique Selling Proposition
2.6 Transaction
2.7 Product or Service Range

3. Tools for the Description of Business Models
   3.1 Business Model Canvas
   3.2 St. Gallen Business Model Navigator
   3.3 MIT Framework

4. Patterns of Digital Business Models
   4.1 Long Tail
   4.2 Multi-Sided Pattern
   4.3 Free and Freemium
   4.4 OPEN API Pattern

5. Digital Business Models and Business Plans
   5.1 Integration of the Business Model into the Business Plan
   5.2 Company Positioning and the Digital Business Model
   5.3 Digital Business Models as Innovation Drivers for the Development of New Businesses

Literature

Compulsory Reading

Further Reading

- Gassmann, O., Frankenberger, K., & Choudury, M. (2020). The business model navigator: The strategies behind the most successful companies (Second edition). FT Financial Times publishing. Pearson Education, Limited.
- Weil, P., & Woerner, S. L. (2018). What's your digital business model? Six questions to help you to build the next-generation enterprise. Harvard Business Review Press.
- Wirtz, B. W. (2019). Digital Business Models: Concepts, Models, and the Alphabet Case Study (1st edition 2019). Progress in IS. Springer International Publishing.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Advanced Workbook, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Advanced Workbook, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Corporate Finance and Investment

Module Code: DLBCFIE

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Muhammad Ashfaq (Corporate Finance and Investment)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Corporate Finance and Investment (DLBCFIE01)

Module Exam Type	
Module Exam Study Format: Distance Learning Written Assessment: Written Assignment Study Format: myStudies Written Assessment: Written Assignment	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Introduction to Corporate Finance
- Ownership and Corporate Governance
- Understanding Financial Statements and Key Performance Indicators
- Basic Concepts of Financial Theory
- Types of Capital and Financing
- Short-term Financing Decisions
- Capital Budgeting and Decision-Making Methods in Investment

Learning Outcomes

Corporate Finance and Investment

On successful completion, students will be able to

- recognize the targets and scope of corporate finance and the role of financial markets .
- understand agency-problems in corporations and how incentives and institutional and market mechanisms are used to mitigate agency costs .
- interpret financial statements and key performance indicators and draw conclusions about financing alternatives and potentials of a corporation.
- consider the time value of money and calculate the cost of capital used to optimize future project cash flow streams.
- implement a long-term financing strategy and structure for corporations based on an appropriate mix of equity, debt, leasing, and hybrid financial instruments.
- effectively utilize cash management and working capital management to reduce short-term financing needs and costs.
- prepare investment decisions, estimate expected project cash flows and incorporate cash flow related risks into the decision process.
- apply investment decision methodologies to evaluate and select favorable corporate investment projects.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the fields of Finance & Tax Accounting	All Bachelor Programmes in the Business & Management fields

Corporate Finance and Investment

Course Code: DLBCFIE01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course introduces students to the targets and scope of corporate finance and the role of financial markets. The separation of ownership and control is a constituent feature of corporations; students explore the resulting agency problems and the mechanisms available to mitigate the costs of agency relationships.Students will be introduced to fundamentals of theory and practice regarding principles of modern corporate finance. They will learn to read and analyze financial statements from a financing point of view and develop a detailed understanding of concepts such as the time value of money, interest rates, and cost of capital. After introducing basic concepts, equity and debt financing will be discussed at length. The financial leverage effect on rates of return will be explored and leasing and hybrid financial instruments as an alternative to pure equity and debt financing are presented. Students will study how corporations apply short-term measures of financing and how effective cash and working capital management is used to reduce short-term financing needs and costs.This course will conclude with a discussion on the investment processes of corporations with a particular focus on the challenge of estimating expected cash flows. Students will learn how to include risk as a factor in the decision process and be able to analyse applied investment rules and methodologies.

Course Outcomes

On successful completion, students will be able to

- recognize the targets and scope of corporate finance and the role of financial markets .
- understand agency-problems in corporations and how incentives and institutional and market mechanisms are used to mitigate agency costs .
- interpret financial statements and key performance indicators and draw conclusions about financing alternatives and potentials of a corporation.
- consider the time value of money and calculate the cost of capital used to optimize future project cash flow streams.
- implement a long-term financing strategy and structure for corporations based on an appropriate mix of equity, debt, leasing, and hybrid financial instruments.
- effectively utilize cash management and working capital management to reduce short-term financing needs and costs.
- prepare investment decisions, estimate expected project cash flows and incorporate cash flow related risks into the decision process.
- apply investment decision methodologies to evaluate and select favorable corporate investment projects.

Contents

Literature
Compulsory Reading
Further Reading ▪ Brigham, E. F., & Houston, J. F. (2019). Fundamentals of financial management (15th ed.). Southwestern-Cengage. ▪ Zutter, C. J., & Smart, S. B. (2019). Principles of managerial finance (15th ed.). Pearson .

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
	☑ Audio	
	☑ Slides	

Mechanics - Kinematics and Dynamics

Module Code: DLBROMKD_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Mechanics - Kinematics and Dynamics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Mechanics - Kinematics and Dynamics (DLBROMKD01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Kinematics
- Differential kinematics
- Trajectory planning
- Dynamics

Learning Outcomes

Mechanics - Kinematics and Dynamics

On successful completion, students will be able to

- describe the kinematics of a mass point, rigid body and multibody systems.
- describe the kinetics of a mass point and rigid body.
- differentiate and describe collision processes.
- model the dynamics of multibody systems.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Mechanics - Kinematics and Dynamics

Course Code: DLBROMKD01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Mechanical Engineering applies physical principles to technical systems and represents a fundamental discipline in engineering sciences. In addition to Statics and Elastostatics modules, the modules Kinematics and Dynamics enrich the engineering mechanics lecture series. Using kinematics, which deals with the motion of mass points and rigid bodies without addressing the cause of the motion, the foundation of kinetics is taught. Kinetics in turn describes the change of motion quantities under the influence of forces. Based on that, collision processes and associated specific momentum changes are described. Furthermore, the concept of mechanical oscillation is introduced. In this course, both the kinematic aspect (change of motion quantities) and the kinetic aspect (forces and moments) are treated.

Course Outcomes

On successful completion, students will be able to

- describe the kinematics of a mass point, rigid body and multibody systems.
- describe the kinetics of a mass point and rigid body.
- differentiate and describe collision processes.
- model the dynamics of multibody systems.

Contents

1. Kinematics
   - 1.1 Motion of a Point Mass
   - 1.2 Motion of Rigid Bodies
   - 1.3 Motion of Multibody Systems
   - 1.4 Kinematics of Relative Motion
2. Kinetics
   - 2.1 Dynamics of a Point Mass
   - 2.2 Dynamics of Systems of Point Masses
   - 2.3 Dynamics of Rigid Bodies
3. Collisions
   - 3.1 Impact Phases

3.2 Direct Impact
3.3 Oblique Impact
3.4 Central Impact
3.5 Eccentric Impact

4. Multibody System Dynamics
4.1 Lagrangian
4.2 Lagrange Equations
4.3 D'Alembert's Principle
4.4 Newton-Euler Equations

5. Oscillations
5.1 Basic Concepts
5.2 Free Vibrations
5.3 Nonlinear Free Vibrations
5.4 Forced Vibrations

Literature

Compulsory Reading

Further Reading

- Ben-Ari, M./Mondada, F. (2017): Elements of Robotics. Springer International Publishing, Cham.
- Corke, P. (2017): Robotics, Vision and Control: Fundamental Algorithms In MATLAB. 2nd ed., Springer International Publishing, Cham.
- Mihelj, M., et al (2018): Robotics. 2nd ed., Springer International Publishing, Cham.
- Siciliano, B./Khatib, O. (Eds.) (2016): Springer Handbook of Robotics. Springer International Publishing, Cham.
- Siciliano, B., Sciavicco, L., Villani, L. Oriolo, G. (2009): Robotics Modeling Planning and Control. Springer-Verlag London

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Principles of Management

Module Code: DLBBAPM_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Andreas Herrmann (Principles of Management)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Principles of Management (DLBBAPM01_E)

Module Exam Type	
Module Exam Study Format: myStudies Written Assessment: Case Study Study Format: Distance Learning Written Assessment: Case Study	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Management Functions
- Managerial Decision-Making
- Planning and Goal-Setting
- Strategic Planning
- Organizing
- Leading
- Controlling

Learning Outcomes

Principles of Management

On successful completion, students will be able to

- understand the functions, roles and influencing-factors of management.
- explain the decision-making process.
- discuss basic corporate und competitive strategies.
- analyze organizational structures and designs.
- transfer knowledge about basic principles of management to real-world cases.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the fields of Business Administration & Management	All Bachelor Programmes in the Business field

Principles of Management

Course Code: DLBBAPM01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In the fast-changing and complex environment of today's business world the economic survival and success of an organization depends highly on its management. For future managers it is indispensable to be familiar with the fundamental principles of management as the basis for the development of further managerial knowledge and skills. This course introduces necessary functions, roles and skills for managers and their decision-making process. Furthermore, it discusses the basic managerial functions of planning, organizing, leading and controlling in detail.

Course Outcomes

On successful completion, students will be able to

- understand the functions, roles and influencing-factors of management.
- explain the decision-making process.
- discuss basic corporate und competitive strategies.
- analyze organizational structures and designs.
- transfer knowledge about basic principles of management to real-world cases.

Contents

1. Introduction to Management
   - 1.1 Functions, Roles and Skills of Managers
   - 1.2 Influencing Factors on Managers' Tasks
   - 1.3 History of Management
2. Managerial Decision-Making
   - 2.1 Decision-Making Process
   - 2.2 Approaches to Decision Making
   - 2.3 Types of Decisions and Decision-Making Conditions
3. Planning and Goal-Setting
   - 3.1 The Role of Planning
   - 3.2 Goals and Plans
   - 3.3 Setting Goals and Developing Plans

4. Strategic Planning
   - 4.1 Strategic Management
   - 4.2 The Strategic Management Process
   - 4.3 Corporate Strategies
   - 4.4 Competitive Strategies

5. Organizing
   - 5.1 Organizational Structures and Design
   - 5.2 Organizational Change
   - 5.3 Managing Change

6. Leading
   - 6.1 Interpersonal and Organizational Communication
   - 6.2 Organizational Behavior
   - 6.3 Leadership

7. Controlling
   - 7.1 The Control Process
   - 7.2 Tools for Measuring Organizational Performance

Literature

Compulsory Reading

Further Reading

- Bright, D. S., Cortes, A. H., Hartmann, E., Parboteeah, K. P., Pierce, J. L., Reece, M., Shah, A., Terjesen, S., Weiss, J., White, M. A., Gardner, D. G., Lambert, J., Leduc, L. M., Leopold, J., Muldoon, J., & O´Rourke, J. S. (2019). Principles of management. OpenStax.
- Robbins, S. P., & Coulter, M. (2018). Management (global ed., 14th ed.). Pearson.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Automation Technology

Module Code: DLBROEIRA2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Ha Ngo (Automation Technology)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Automation Technology (DLBROEIRA02_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Modern automation systems
- Programmable logic controllers
- Batch automation
- SCADA
- Industrial communications
- Distributed control systems
- Cyber-security

Learning Outcomes

Automation Technology

On successful completion, students will be able to

- understand modern automation systems.
- identify trends and challenges.
- design an industrial automation system for an application.
- name relevant cyber-security issues.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Automation Technology

Course Code: DLBROEIRA02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Automation technology refers to the analysis, design and improvement of existing or new automation systems. Modern automation systems are characterized by the combination of many different devices, such as actuators, sensors, machines, which must be able to perform a coordinate action and to exchange data with each other. This course introduces such modern automation systems by listing their necessary components, presenting current challenges and trends and explaining communication technologies to build effective industrial automation networks. A brief overview on the topic of cyber-security is also given.

Course Outcomes

On successful completion, students will be able to

- understand modern automation systems.
- identify trends and challenges.
- design an industrial automation system for an application.
- name relevant cyber-security issues.

Contents

1. Introduction
   - 1.1 Evolution of Automation
   - 1.2 Industrial Revolutions
   - 1.3 Modern Automation Systems
   - 1.4 Challenges and Trends
2. An Introduction to Programmable Logic Controllers
   - 2.1 Hardware
   - 2.2 Internal Architecture
   - 2.3 I/O
   - 2.4 Ladder and Functional Block Programming
   - 2.5 Programming Methods
3. Batch Automation
   - 3.1 Basics

- 3.2 Applications

4. SCADA Systems
   - 4.1 Overview
   - 4.2 Components
   - 4.3 Communication Technologies
   - 4.4 Interfaces

5. Industrial Communication Technologies
   - 5.1 Industrial Networks
   - 5.2 HART
   - 5.3 PROFIBUS
   - 5.4 Wireless Communication
   - 5.5 OPC
   - 5.6 Konnex (EIB/KNX)
   - 5.7 LonWorks®

6. Distributed Control System
   - 6.1 Evolution of Control Systems
   - 6.2 Components of Distributed Control Systems

7. Cyber Security in Industrial Automation
   - 7.1 Plant Control Network
   - 7.2 Cyber Attacks
   - 7.3 Common Industrial Software Weaknesses

Literature

Compulsory Reading

Further Reading

- Dey, C., & Sen, S. (2020). Industrial automation technologies. CRC.
- Gardner, R. F. (2020). Introduction to plant automation and controls. CRC.
- Lehto, M., & Neittaanmäki, P. (2015). Cyber security: Analytics, technology and automation. Springer.
- Mehta, B. R., & Reddy, Y. J. (2014). Industrial process automation systems: Design and implementation. Elsevier.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

5. Semester

Circular Economy

Module Code: DLBEPWITN1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Christian Kroll (Circular Economy)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Circular Economy (DLBEPWITN01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Origin and Definition of the Circular Economy
- Drivers of the Circular Economy
- The "R-framework of circularity" - the 7 "Rs" and their application
- Requirements of the Circular Economy
- Transformation towards a Circular Economy
- Examples of Approaches and Business Models of the Circular Economy

Learning Outcomes

Circular Economy

On successful completion, students will be able to

- understand which origins and reasons make a reshape and restructure of the current linearly organized economy towards a circular economy necessary.
- describe the most important drivers of the circular economy.
- explain important concepts and deductions of the Circular Economy and their impact on organizational forms, business models, production and technologies as well as economic activity, and to evaluate their advantages and disadvantages.
- understand and learn to shape the transformation process from a currently linearly organized economy to a circular economy.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Quality and Sustainability Management	All Bachelor Programs in the Management field

Circular Economy

Course Code: DLBEPWITN01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In contrast to the currently predominant principle of linear economy in industrial production and economy, the approach of the circular economy represents a regenerative system. Theobjective of the Circular Economy is to lower the use of resources and to reduce waste production, emissions and energy waste by slowing down, reducing and closing energy and material cycles. The course provides an overview of the origins, the framework conditions and the requirements of a Circular Economy. In addition, the students receive an insight into the economic transformation processes and adjustments in terms of production, technologies, supply chain, forms of organization and business models.

Course Outcomes

On successful completion, students will be able to

- understand which origins and reasons make a reshape and restructure of the current linearly organized economy towards a circular economy necessary.
- describe the most important drivers of the circular economy.
- explain important concepts and deductions of the Circular Economy and their impact on organizational forms, business models, production and technologies as well as economic activity, and to evaluate their advantages and disadvantages.
- understand and learn to shape the transformation process from a currently linearly organized economy to a circular economy.

Contents

1. Origin and Definition of the Circular Economy
   - 1.1 Background, History and Definition
   - 1.2 Environmental Crisis
   - 1.3 Waste of Resources
   - 1.4 Negative Externalities
2. Drivers of the Circular Economy
   - 2.1 Legal Framework in Europe and Germany
   - 2.2 International Framework Conditions - Paris Agreement and UN Sustainable Development Goals
   - 2.3 Technological and Economic Drivers, Such as the Sharing Economy

2.4 Social and Political Drivers, Such as Zero Waste Vision and Coal Exit

3. The "R-Framework of Circularity" - The 7 "Rs" and Their Application
   - 3.1 "Rethink"
   - 3.2 "Reduce"
   - 3.3 "Re-Use" and "Repair"
   - 3.4 "Refurbish" and "Recover"
   - 3.5 "Recycle"

4. Requirements of the Recycling Economy
   - 4.1 Other Forms and Demands for Raw Materials
   - 4.2 Critical and Scarce Raw Materials
   - 4.3 Example: Renewable Energies

5. Transformation Towards a Circular Economy
   - 5.1 Substitution and Design Strategies
   - 5.2 Political and Economic Strategies
   - 5.3 Transformation of the Production and Supply Chain
   - 5.4 Transformation of the "Throwaway" Culture

6. Examples for Approaches and Business Models of the Circular Economy
   - 6.1 Waste Management
   - 6.2 Energy Industry

Literature

Compulsory Reading

Further Reading

- Lacy, P./Long, J./Spindler, W. (2020): The Circular Economy Handbook: Realizing the Circular Advantage, Palgrave Macmillan, Basingstoke, UK.
- Webster, Ken (2017): The Circular Economy: A Wealth of Flows, 2nd Edition, Lightning Source, LaVergne, USA.
- Gallaud, D./Laperche, B. (2016): Circular Economy, Industrial Ecology and Short Supply Chain: Towards Sustainable Territories, Innovation, Entrepreneurship, Management: Smart Innovation Set, Band 4, John Wiley & Sons, New York, USA.

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Safety of Industrial Plants and Machines

Module Code: DLBROSIPM_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Torsten Bruns (Safety of Industrial Plants and Machines)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Safety of Industrial Plants and Machines (DLBROSIPM01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Methods
- Identification of weak spots
- Product safety
- Declaration of conformity
- FMEA

Learning Outcomes

Safety of Industrial Plants and Machines

On successful completion, students will be able to

- assess the need for product safety measures.
- assess the degree of compliance with the Machinery Directive (Directive 2006/42/EC).
- perform an FMEA.
- determine the Performance Level (PL).
- apply methods and processes for system analysis and avoid weak points preemptively.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology fields

Safety of Industrial Plants and Machines

Course Code: DLBROSIPM01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students will get an overview of the Machinery Directive (Directive 2006/42/EC), which regulates the protective measures for complete and partial machines or systems concerning the prevention of accidents. Participants will gain necessary skills to put a machine on the market. This includes risk assessment and a subsequent declaration of conformity (for complete machines) or declaration of incorporation (for partial machines) in accordance with the Machinery Directive (Directive 2006/42/EC). The Declaration of Conformity or Declaration of Incorporation, in turn, is a prerequisite for acquiring the CE label for complete machines. It refers to protective measures not only for the operator, but also for the environment. In addition, students will be able to determine the Performance Level (PL) as part of risk assessment, a measure of the reliability of a safety function of security-related parts of the control system. The recommended measures must be implemented by both the manufacturer and the operator. All these security-related aspects are evaluated in risk assessment and appropriate measures are proposed or recommendations are made to reduce or avoid hazards.

Course Outcomes

On successful completion, students will be able to

- assess the need for product safety measures.
- assess the degree of compliance with the Machinery Directive (Directive 2006/42/EC).
- perform an FMEA.
- determine the Performance Level (PL).
- apply methods and processes for system analysis and avoid weak points preemptively.

Contents

1. Introduction and Basics
    - 1.1 Safety Engineering
    - 1.2 Legal Aspects and Product Liability
2. EU Directives, Laws and Standards
    - 2.1 Important CE Directives
    - 2.2 Standards
3. Risk Assessment

3.1 Risk Assessment According to EN ISO 12100
3.2 Risk Assessment According to EN ISO 13849-1 and EN IEC 62061
3.3 Further, Complementary Methods FMEA (Failure Mode and Effects Analysis)

4. Design-Driven Risk Reduction
4.1 Safeguarding Against Dangers
4.2 Safety-Relevant Sensors

5. CE Conformity
5.1 Procedures for Assessing Conformity
5.2 EC Declaration of Conformity and CE Marking

Literature

Compulsory Reading

Further Reading

- Jespen, Torben. (2016). Risk Assessments and Safe Machinery Ensuring Compliance with the EU Directives. Springer International Publishing.
- David J. Smith, & Kenneth G. L. Simpson. (2016). The Safety Critical Systems Handbook : A Straightforward Guide to Functional Safety: IEC 61508 (2010 Edition), IEC 61511 (2015 Edition) and Related Guidance: Vol. Fourth edition. Butterworth-Heinemann.
- D.H. Stamatis. (2019). Risk Management Using Failure Mode And Effect Analysis (FMEA). ASQ Quality Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Introduction to Robotics

Module Code: DLBROIR-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Ha Ngo (Introduction to Robotics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Introduction to Robotics (DLBROIR01-01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Introduction to Robotics
- Trends
- Industrial Robots
- Mobile Robots
- Applications

Learning Outcomes

Introduction to Robotics

On successful completion, students will be able to

- name important developments in the field of robotics.
- understand the mechanical structure and characteristics of robots.
- name characteristics and challenges of industrial robots.
- name characteristics and challenges of mobile robots.
- understand the role of robots in applications.
- name and understand current trends in the field of robotics.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology field

Introduction to Robotics

Course Code: DLBROIR01-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Robotics is experiencing very interesting developments, which experts describe as being a transition to a new generation of robots. We have moved from the "4Ds" of Robotics 1.0 (dull, dirty, dumb, dangerous) to the "4Ss" of Robotics 2.0 (smarter, safer, sensors, simple), but we still need to proceed further to the "4Ms" of Robotics 3.0 (multitasking, emotive, morphing, multiagent). This course, thus, provides the required background to understand the main development of robotics looking at industrial as well as at mobile robots, their main characteristics, issues, challenges, applications, and development trends.

Course Outcomes

On successful completion, students will be able to

- name important developments in the field of robotics.
- understand the mechanical structure and characteristics of robots.
- name characteristics and challenges of industrial robots.
- name characteristics and challenges of mobile robots.
- understand the role of robots in applications.
- name and understand current trends in the field of robotics.

Contents

1. What is Robotics?
   - 1.1 Basics and Definitions
   - 1.2 History and Cultural Influence
   - 1.3 Challenges and Trends (from Robotics 1.0 to Robotics 3.0)
2. Robots
   - 2.1 Mechanical Structure
   - 2.2 Kinematic Chains
   - 2.3 Market Overview
3. Industrial Robots
   - 3.1 Components of Industrial Robot Systems
   - 3.2 Characteristics

3.3 Common Industrial Robots
3.4 Applications
3.5 Trends

4. Mobile Robots
   4.1 Components of Mobile Robot Systems
   4.2 Characteristics
   4.3 Common Mobile Robots
   4.4 Applications
   4.5 Trends

5. Applications
   5.1 Industrial Robots
   5.2 Healthcare
   5.3 Agriculture or Field Robotics
   5.4 Space and Defense
   5.5 Warehouse and Logistics
   5.6 Construction
   5.7 Wearables
   5.8 Social Robots

Literature

Compulsory Reading

Further Reading

- Mihelj, M., Bajd, T., Ude, A., Lenarcic, J., Stanovnik, A., Munih, M., Rejc, J., & Slajpah, S. (2019). Robotics(2nd ed.). Springer.
- Ben-Ari, M., & Mondada, F. (2017). Elements of robotics. Springer.
- Siciliano, B., & Khatib, O. (Eds.). (2016). Springer handbook of robotics. Springer

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Mechatronic Systems

Module Code: DLBROMSY_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Torsten Bruns (Mechatronic Systems)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Mechatronic Systems (DLBROMSY01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Modeling
- Electrical drives
- Machines and drivetrains
- Actuators and sensors

Learning Outcomes

Mechatronic Systems

On successful completion, students will be able to

- understand the basics of mathematical modeling of engineering systems.
- model and simulate common mechatronic systems.
- apply mechatronic systems for a given application.
- understand the basics of actuators, sensors, and system integration.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology fields

Mechatronic Systems

Course Code: DLBROMSY01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Numerous processes and products experience an increasing combination of traditional and advanced mechanics with electronics. Especially with information processing, this development leads to a so-called mechatronic system, with the purpose to improve overall performance. This course illustrates the development of mechatronics and focuses on some important aspects, such as modeling techniques (which are relevant for system simulation, design and optimization), common electric drives, machines and drivetrains, actuators and sensors.

Course Outcomes

On successful completion, students will be able to

- understand the basics of mathematical modeling of engineering systems.
- model and simulate common mechatronic systems.
- apply mechatronic systems for a given application.
- understand the basics of actuators, sensors, and system integration.

Contents

1. Introduction
   - 1.1 Mechatronic Systems
   - 1.2 Examples
2. Modeling
   - 2.1 Fundamental Equations
   - 2.2 Energy Balance
   - 2.3 Connection of Process Elements
   - 2.4 Dynamics of Mechanical Systems
   - 2.5 Mechanical Elements
3. Electrical Drives
   - 3.1 Electromagnets
   - 3.2 Direct Current Motors
   - 3.3 Alternating Current Motors

4. Machines and Drivetrains
   - 4.1 Complete Machines
   - 4.2 Characteristics and Stability of Machines
   - 4.3 Motors and Pumps
   - 4.4 Automobile Drivetrain
   - 4.5 Signal Energy
   - 4.6 Applications

5. Actuators and Sensors
   - 5.1 Basic Structures
   - 5.2 Electromechanical Drives
   - 5.3 Hydraulic Actuators
   - 5.4 Pneumatic Actuators
   - 5.5 Unconventional Actuators

Literature

Compulsory Reading

Further Reading

- Boukas, E. K./Al-Sunni, F. M. (2012): Mechatronic systems: Analysis, design and implementation. Springer, Berlin.
- Davim, J. P. (2011): Mechatronics. John Wiley & Sons, Hoboken, NJ.
- Isermann, R. (2005): Mechatronic systems: Fundamentals. Springer, London.
- Janschek, K./Richmond, K. (2012): Mechatronic systems design methods, models, concepts. Springer, Berlin

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Practice Exam
- ☑ Online Tests

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Sustainable Technologies

Module Code: DLBEPWITN2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Christian Kroll (Sustainable Technologies)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Sustainable Technologies (DLBEPWITN02_E)

Module Exam Type	
Module Exam Study Format: Duales myStudium Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Energy Technologies
- Water Technologies
- Raw Material and Material Technologies
- Urban Technologies
- Transport Technologies
- Evaluation of Sustainable Technologies

Learning Outcomes

Sustainable Technologies

On successful completion, students will be able to

- remember the definition and concepts of the term sustainability,
- understand different systems and their interactions as well as the social significance of sustainable technologies,
- remember the areas of use and possible applications of sustainable technologies,
- analyze, evaluate and compare sustainable technologies based on objective criteria.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Natural Sciences	All Bachelor Programs in the IT & Technology field

Sustainable Technologies

Course Code: DLBEPWITN02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Sustainable technologies differ significantly from conventional technologies, which often cause ecological and social problems due to their dependence on conventional primary energy sources (fossil or nuclear) and/or their emissions. In the course, students get an overview of the areas and applications of sustainable technologies and gain insight into methods of evaluating and comparing them based on objective criteria.

Course Outcomes

On successful completion, students will be able to

- remember the definition and concepts of the term sustainability,
- understand different systems and their interactions as well as the social significance of sustainable technologies,
- remember the areas of use and possible applications of sustainable technologies,
- analyze, evaluate and compare sustainable technologies based on objective criteria.

Contents

1. Sustainable technologies: Introduction and context
   - 1.1 Characteristics of sustainable technologies
   - 1.2 Systems and interdependencies
   - 1.3 Social relevance
   - 1.4 Economic aspects of sustainable technologies
   - 1.5 Technical challenges of sustainable technologies
2. Energy Technologies
   - 2.1 Energy forms
   - 2.2 Conventional primary energy sources
   - 2.3 Regenerative primary energy sources
   - 2.4 Energy storage technology
   - 2.5 Energy conversion technologies and conversion efficiency
   - 2.6 Energy supply grids
3. Water Technologies

- 3.1 Water treatment and conditioning
- 3.2 Water systems

4. Raw material and material technologies
   - 4.1 Material efficiency
   - 4.2 Optimization of material functionalities
   - 4.3 Recycling

5. Urban Technologies
   - 5.1 Building technology
   - 5.2 Supply and disposal
   - 5.3 Synergy potentials in urban centers

6. Transport Technologies
   - 6.1 Sustainable transport systems
   - 6.2 Fuels
   - 6.3 Material reduction

7. Evaluation of sustainable technologies
   - 7.1 Upstream and downstream energy chains
   - 7.2 Material flow analyses
   - 7.3 Life cycles, obsolescence and recyclability, life cycle assessment
   - 7.4 Comparisons based on individual criteria
   - 7.5 Technology impact assessment

Literature
Compulsory Reading
Further Reading ▪ Benetto, E./ Gericke, K. (Eds.). (2018): Designing Sustainable Technologies, Products and Policies: From Science to Innovation. Springer International Publishing; Springer. ▪ Mino, T./ Shogo, K. (Eds.). (2020): Framing in Sustainability Science: Theoretical and Practical Approaches. Science for Sustainable Societies. Springer Singapore. ▪ Kamran, M./ Fazal, M. (2021). Fundamentals of Renewable Energy Systems: Technologies, design and operation. Elsevier Academic Press. ▪ Hüttl, R. F./ Bens, O./ Bismuth, C.,/ Hoechstetter, S. (Eds.). (2016). Water Resources Development and Management. Society - Water - Technology: A Critical Appraisal of Major Water Engineering Projects. Springer International Publishing; Springer. ▪ Riggs, W. (Ed.). (2020). Disruptive transport: Driverless cars, transport innovation and the sustainable city of tomorrow. Routledge.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Introduction to Data Protection and Cyber Security

Module Code: DLBCSIDPITS

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Ralf Kneuper (Introduction to Data Protection and Cyber Security)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Introduction to Data Protection and Cyber Security (DLBCSIDPITS01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Fundamentals of IT Security
- Data Protection
- IT Security Management
- Network and Communication Security

Learning Outcomes

Introduction to Data Protection and Cyber Security

On successful completion, students will be able to

- explain the terms and concepts of IT security and know the typical procedures and techniques which exist in each area.
- cite the legal regulations on data protection and explain their implementation.
- discuss in-depth IT security management and suitable measures for implementation.
- use their overview knowledge of activities and strategies for IT security in software and system development.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Introduction to Data Protection and Cyber Security

Course Code: DLBCSIDPITS01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, the students are familiarized with important concepts from the field of IT security. Basic terms are introduced and discussed, and typical application fields, areas of IT security application, and typical procedures and techniques are introduced and described.

Course Outcomes

On successful completion, students will be able to

- explain the terms and concepts of IT security and know the typical procedures and techniques which exist in each area.
- cite the legal regulations on data protection and explain their implementation.
- discuss in-depth IT security management and suitable measures for implementation.
- use their overview knowledge of activities and strategies for IT security in software and system development.

Contents

1. Fundamentals of Data Protection and Cyber Security
   - 1.1 Conceptual Bases, Protection Goals
   - 1.2 Attacks and Threats
   - 1.3 Security Strategy
   - 1.4 Legal Regulations
2. Data Protection
   - 2.1 Data Protection as a Personal Right
   - 2.2 Basic Principles of Data Protection
   - 2.3 EU General Data Protection Regulation
   - 2.4 Further International Regulations on Data Protection
   - 2.5 Cross-Border Data Flow
   - 2.6 Data Protection in Everyday Life
3. Basic Functions of Cyber Security and Their Implementation
   - 3.1 Identification and Authentication
   - 3.2 Rights Management

3.3 Rights Check
3.4 Preservation of Evidence

4. Cyber Security Management
   4.1 Basic Concepts and Standards in Cyber Security Management
   4.2 Series of Standards ISO 2700x

5. Cyber Security Management in Everyday Life
   5.1 Password Management
   5.2 Data Backup
   5.3 Email Security
   5.4 Protection Against Viruses and Other Malware
   5.5 Protection Against Social Engineering Attacks

6. Network and Communication Security
   6.1 Firewall Technology
   6.2 Network Separation
   6.3 Security in WLAN, Mobile Networks, Bluetooth, and NFC

7. Cyber Security in the Development of Software and Systems
   7.1 Protection of the Development Environment
   7.2 Secure Development
   7.3 Common Criteria

Literature

Compulsory Reading

Further Reading

- Arnold, R. (2017). Cybersecurity: A business solution. An executive perspective on managing cyber risk. Threat Sketch.
- European Parliament and Council of the European Union. (2016). EU General Data Protection Regulation (GDPR): Regulation 2016/679 of the European Parliament and of the council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation). Official Journal of the European Union. Chapters 1—3 .
- Mattord, H., & Whitman, M. (2017). Management of information security. Cengage.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Introduction to the Internet of Things

Module Code: DLBINGEIT_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Marian Benner-Wickner (Introduction to the Internet of Things)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Introduction to the Internet of Things (DLBINGEIT01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Internet of Things Fundamentals
- Social and Economic Significance
- Communication Standards and Technologies
- Data Storage and Processing
- Design and Development
- Applicability

Learning Outcomes

Introduction to the Internet of Things

On successful completion, students will be able to

- grasp the distinctive features of Internet of Things (IoT) and IoT systems.
- understand the social and economic importance of Internet of Things.
- identify the most important standards for communication between IoT devices.
- differentiate between various techniques for storing and processing data in IoT systems.
- identify different architectures and technologies for structuring IoT systems.
- recognize challenges of data protection and data security in IoT systems.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software	All Bachelor Programmes in the IT & Technology field

Introduction to the Internet of Things

Course Code: DLBINGEIT01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The aim of this course is to give students an insight into technical and theoretical basics of the Internet of Things (IoT) and its fields of application. In addition to the general structure of IoT systems and the technology standards used in them, students are also taught the importance of Internet of Things for economy and society. Furthermore, this course demonstrates how data is exchanged, stored and processed in IoT.

Course Outcomes

On successful completion, students will be able to

- grasp the distinctive features of Internet of Things (IoT) and IoT systems.
- understand the social and economic importance of Internet of Things.
- identify the most important standards for communication between IoT devices.
- differentiate between various techniques for storing and processing data in IoT systems.
- identify different architectures and technologies for structuring IoT systems.
- recognize challenges of data protection and data security in IoT systems.

Contents

1. Internet of Things Fundamentals
   - 1.1 The Internet of Things - Basics and Motivation
   - 1.2 Evolution of the Internet - Web 1.0 to Web 4.0
2. Social and Economic Significance
   - 2.1 Innovations for Consumers and Industry
   - 2.2 Implications on People and the World of Work
   - 2.3 Data Protection and Data Security
3. Communication Standards and Technologies
   - 3.1 Network Topologies
   - 3.2 Network Protocols
   - 3.3 Technologies
4. Data Storage and Processing

4.1 Networked Storage with Linked Data and RDF(S)
4.2 Analysis of Networked Data using a Semantic Reasoner
4.3 Processing of Data Streams with Complex Event Processing
4.4 Operation and Analysis of Large Data Clusters using NoSQL and MapReduce

5. Design and Development
5.1 Software Engineering for Distributed and Embedded Systems
5.2 Architectural Patterns and Styles for Distributed Systems
5.3 Platforms: Microcontrollers, Monoboard Computers, One-Chip Systems

6. Applicability
6.1 Smart Home / Smart Living
6.2 Ambient Assisted Living
6.3 Smart Energy / Smart Grid
6.4 Smart Factory
6.5 Smart Logistics

Literature

Compulsory Reading

Further Reading

- Buyya, R. & Vahid Dastjerdi, A. (Hrsg.) (2016). Internet of things. Principles and paradigms. Morgan Kaufmann, Cambridge (MA).
- Dian, F. J., & Vahidnia, R. (2020). IoT use cases and technologies. British Columbia Institute of Technology.
- Firouzi, F., Chakrabarty, K., & Nassif, S. (2020). Intelligent Internet of Things: From device to fog and cloud. Springer.
- Gilchrist, A. (2016). Industry 4.0. The industrial internet of things. Apress.
- Raj, P., & Raman, A. C. (2017). The Internet of things: enabling technologies, platforms, and use cases. CRC Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Sensor Technology

Module Code: DLBROST_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Matthias Eifler (Sensor Technology)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Sensor Technology (DLBROST01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Sensors and transducers
- Resistive, capacitive, inductive, optical and acoustic sensor effects
- Transduction platforms and sensor systems
- Applications
- Advanced sensors

Learning Outcomes

Sensor Technology

On successful completion, students will be able to

- understand the main sensor characteristics.
- read and understand a typical sensor data sheet.
- understand sensor effects.
- understand and characterize sensor platforms.
- select the appropriate sensor technology for a given application.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology field

Sensor Technology

Course Code: DLBROST01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Sensors are at the base of any modern engineering system, for example, control systems in robotics. This course provides the basic knowledge to understand sensors and their characteristics. A specific sensor is chosen for an application mainly based on its characteristics and on its physical effect. After an introduction on sensors and types of sensors, this course introduces the main characteristics such as accuracy, precision, resolution, sensitivity, linearity, static and dynamic properties. The second part of the course details the main sensor effects and shows how sensor systems can be built based on such effects and used in engineering applications. The last part of the course shows current trends and advanced applications of sensor technology.

Course Outcomes

On successful completion, students will be able to

- understand the main sensor characteristics.
- read and understand a typical sensor data sheet.
- understand sensor effects.
- understand and characterize sensor platforms.
- select the appropriate sensor technology for a given application.

Contents

1. Introduction to Measurement Uncertainty
   - 1.1 Measurement Uncertainty
   - 1.2 Confidence Intervals
   - 1.3 Expression of Uncertainty
2. Sensors
   - 2.1 Sensors and Transducers
   - 2.2 Selection of Sensors
   - 2.3 Sensor Characteristics
   - 2.4 Measurement Systems and Components
3. Resistive Sensors
   - 3.1 Resistivity and Resistance

- 3.2 Potentiometric Sensors
- 3.3 Strain Gauges
- 3.4 Piezoresistive Sensors
- 3.5 Magnetoresistive Sensors
- 3.6 Thermoresistive Sensors
- 3.7 Optoresistive Sensors

4. Capacitive Sensors
   - 4.1 Capacitance and Permittivity
   - 4.2 Configurations
   - 4.3 Applications

5. Inductive and Magnetic Sensors
   - 5.1 Magnetic and Electromagnetic Quantities
   - 5.2 Magnetic Field Sensors
   - 5.3 Magnetic Displacement and Force Sensors
   - 5.4 Applications

6. Optical Sensors
   - 6.1 Electro-Optical Components
   - 6.2 Optical Displacement Sensors
   - 6.3 Applications

7. Piezoelectric Sensors
   - 7.1 Piezoelectricity
   - 7.2 Force Pressure and Acceleration Sensors
   - 7.3 Applications

8. Acoustic Sensors
   - 8.1 Acoustic Medium
   - 8.2 Measurement Methods
   - 8.3 Applications

9. Advanced Sensor Technology
   - 9.1 Organic Sensors
   - 9.2 Sensors for Health and Environment
   - 9.3 Wearable Sensors
   - 9.4 Wireless Sensors in Industrial Environments

Literature
Compulsory Reading
Further Reading ▪ Dertien, E., & Regtien, P. (2018). Sensors for mechatronics (2nd ed.). Elsevier. ▪ Lin, Y. L., Kyung, C. M., Yasuura, H., & Liu, Y. (Eds.) (2015). Smart sensors and systems. Springer International.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Mechanics - Kinematics and Dynamics

Module Code: DLBROMKD_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Mechanics - Kinematics and Dynamics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Mechanics - Kinematics and Dynamics (DLBROMKD01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Kinematics
- Differential kinematics
- Trajectory planning
- Dynamics

Learning Outcomes

Mechanics - Kinematics and Dynamics

On successful completion, students will be able to

- describe the kinematics of a mass point, rigid body and multibody systems.
- describe the kinetics of a mass point and rigid body.
- differentiate and describe collision processes.
- model the dynamics of multibody systems.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Mechanics - Kinematics and Dynamics

Course Code: DLBROMKD01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Mechanical Engineering applies physical principles to technical systems and represents a fundamental discipline in engineering sciences. In addition to Statics and Elastostatics modules, the modules Kinematics and Dynamics enrich the engineering mechanics lecture series. Using kinematics, which deals with the motion of mass points and rigid bodies without addressing the cause of the motion, the foundation of kinetics is taught. Kinetics in turn describes the change of motion quantities under the influence of forces. Based on that, collision processes and associated specific momentum changes are described. Furthermore, the concept of mechanical oscillation is introduced. In this course, both the kinematic aspect (change of motion quantities) and the kinetic aspect (forces and moments) are treated.

Course Outcomes

On successful completion, students will be able to

- describe the kinematics of a mass point, rigid body and multibody systems.
- describe the kinetics of a mass point and rigid body.
- differentiate and describe collision processes.
- model the dynamics of multibody systems.

Contents

1. Kinematics
   - 1.1 Motion of a Point Mass
   - 1.2 Motion of Rigid Bodies
   - 1.3 Motion of Multibody Systems
   - 1.4 Kinematics of Relative Motion
2. Kinetics
   - 2.1 Dynamics of a Point Mass
   - 2.2 Dynamics of Systems of Point Masses
   - 2.3 Dynamics of Rigid Bodies
3. Collisions
   - 3.1 Impact Phases

3.2 Direct Impact
3.3 Oblique Impact
3.4 Central Impact
3.5 Eccentric Impact

4. Multibody System Dynamics
4.1 Lagrangian
4.2 Lagrange Equations
4.3 D'Alembert's Principle
4.4 Newton-Euler Equations

5. Oscillations
5.1 Basic Concepts
5.2 Free Vibrations
5.3 Nonlinear Free Vibrations
5.4 Forced Vibrations

Literature

Compulsory Reading

Further Reading

- Ben-Ari, M./Mondada, F. (2017): Elements of Robotics. Springer International Publishing, Cham.
- Corke, P. (2017): Robotics, Vision and Control: Fundamental Algorithms In MATLAB. 2nd ed., Springer International Publishing, Cham.
- Mihelj, M., et al (2018): Robotics. 2nd ed., Springer International Publishing, Cham.
- Siciliano, B./Khatib, O. (Eds.) (2016): Springer Handbook of Robotics. Springer International Publishing, Cham.
- Siciliano, B., Sciavicco, L., Villani, L. Oriolo, G. (2009): Robotics Modeling Planning and Control. Springer-Verlag London

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Project: Modeling, Simulation and Control of Robots

Module Code: DLBROPMSCR_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	DLBROMKD01_E	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
N.N. (Project: Modeling, Simulation and Control of Robots)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: Modeling, Simulation and Control of Robots (DLBROPMSCR01_E)

Module Exam Type	
Module Exam Study Format: Fernstudium Written Assessment: Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

This module looks at mathematical modeling of robots from a practical perspective. Students will learn how to build a static or dynamic model of robots in a simulation environment, to perform design, testing, and analysis activities. One task that will be emphasized is the design of motion controllers for parts of a robot, or for a complete robotic system.

Learning Outcomes

Project: Modeling, Simulation and Control of Robots

On successful completion, students will be able to

- perform simulation of dynamic systems.
- name issues related to the numeric simulation of continuous-time systems.
- discuss simulation results to improve the model and the control approach.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology fields

Project: Modeling, Simulation and Control of Robots

Course Code: DLBROPMSCR01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	DLBROMKD01_E

Course Description

Mathematical modeling of robots is very important to implement design and analysis. In the context of industrial internet of things, or Industry 4.0, the building of a so-called digital twin by means of simulation models is a central activity in lieu with many other processes, such as real-time optimization of tasks as well as fault-detection and diagnosis. In this course students will learn how a mathematical model can be implemented in a simulation environment. This model will then be used to carry out motion control design and validate the overall control concept by means of simulation analysis.

Course Outcomes

On successful completion, students will be able to

- perform simulation of dynamic systems.
- name issues related to the numeric simulation of continuous-time systems.
- discuss simulation results to improve the model and the control approach.

Contents

- This course provides the basics in simulation of dynamic systems and implementation of simulation models in computer-aided simulation environments. A simulation model for industrial or mobile robots is built and students will learn how to perform analysis of the model and design motion controllers, validating their approaches in simulation.

Literature

Compulsory Reading

Further Reading

- Corke, P. (2017): Robotics, Vision and Control: Fundamental Algorithms In MATLAB. 2nd ed., Springer International Publishing, Cham.
- Klee, H./Allen, R. (2017): Simulation of dynamic systems with MATLAB and Simulink. 3rd ed., CRC Press, Boca Raton, FL.
- Russell, K./Shen, Q./Sodhi, R. S. (2018): Kinematics and dynamics of mechanical systems: implementation in MATLAB and SimMechanics. 2nd ed., CRC Press, Boca Raton, FL.

Study Format Fernstudium

Study Format	Course Type
Fernstudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint	☑ Slides	☑ Guideline

Regenerative Energy

Module Code: DLBAETWEE2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	None	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Maik Günther (Regenerative Energy)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Regenerative Energy (DLBAETWEE02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Basic Concepts of Regenerative Energy
- Renewable Electricity Generation Using Solar Radiation
- Renewable Electricity Generation Using Wind Power and Hydropower
- Biomass and Waste
- Renewable Generation of Heat
- Political Framework and Emissions Trading

Learning Outcomes

Regenerative Energy

On successful completion, students will be able to

- reproduce and understand the basic concepts of renewable energy.
- understand processes of geothermal and solar thermal energy.
- understand the function of heat pumps and design associated processes.
- understand processes for generating energy with wind power, hydropower, biomass and solar power.
- calculate energy generation with wind power, hydropower, biomass and solar power.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Regenerative Energy

Course Code: DLBAETWEE02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	None

Course Description

The aim of the course is to give students an overview of renewable energy technologies. The first topic is how heat can be generated with the help of geothermal energy and solar thermal energy. Furthermore, the basics of energy generation with wind power, hydropower and solar power are presented.

Course Outcomes

On successful completion, students will be able to

- reproduce and understand the basic concepts of renewable energy.
- understand processes of geothermal and solar thermal energy.
- understand the function of heat pumps and design associated processes.
- understand processes for generating energy with wind power, hydropower, biomass and solar power.
- calculate energy generation with wind power, hydropower, biomass and solar power.

Contents

1. Basic Concepts of Regenerative Energy
   - 1.1 Technical Evaluation Criteria
   - 1.2 Energy-Based Evaluation Criteria
   - 1.3 Economic Assessment Criteria
   - 1.4 Potential and Availability
2. Renewable Electricity Generation Using Solar Radiation
   - 2.1 Solar Radiation
   - 2.2 Historical Developments
   - 2.3 Functional Principle of Photovoltaics
   - 2.4 Effects on the Electricity System
3. Renewable Electricity Generation Using Wind Power and Hydropower
   - 3.1 Wind Turbines
   - 3.2 Hydroelectric Power Plants
   - 3.3 Location Factors for Wind Turbines and Hydroelectric Power Plants

4. Biomass and Waste
   - 4.1 Biomass
   - 4.2 Biogas Plants
   - 4.3 Incineration of Waste

5. Renewable Generation of Heat
   - 5.1 Solar Thermal Energy
   - 5.2 Geothermal Energy
   - 5.3 Geothermal Reservoirs and Systems
   - 5.4 Heat Pumps

6. Political Framework and Emissions Trading
   - 6.1 Climate Policy and Climate Protection Agreements
   - 6.2 Emissions Trading
   - 6.3 Future Requirements for Energy Storage and Generation

Literature

Compulsory Reading

Further Reading

- Anani, Nader. (2020). Renewable Energy Technologies and Resources. Artech House.
- Krischer, Katharina Schönleber, Konrad. (2015). Physics of Energy Conversion. De Gruyter.
- Sallam, Abdelhay A. Malik, Om P.. (2021). Power Grids with Renewable Energy - Storage, Integration and Digitalization. Institution of Engineering and Technology.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Supply Chain Management I

Module Code: DLBDSESCM1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Alex Leberling (Supply Chain Management I)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Supply Chain Management I (DLBDSESCM01)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Historical and terminological aspects of the SCM concept
- Motives for the creation of cross-company value creation networks
- Design principles and effects of value creation networks
- Logistical core processes and SCM
- Information technology aspects of the SCM concept
- Coordination and collaboration of the network partners
- Industry-specific solutions of the SCM

Learning Outcomes

Supply Chain Management I

On successful completion, students will be able to

- explain the importance of cross-company value creation processes.
- understand common concepts for modeling cross-company value creation processes.
- understand dynamic effects in supply chains and can systematize their causes and effects.
- explain important theoretical concepts for describing the characteristics and challenges of cross-company value creation processes.
- explain the approaches and problem categories commonly used in the context of supply chain management.
- understand important reference and/or management models for the concretization of supply chain systems.
- name and detail important roles and tasks in the SCM network.
- deal with the coordination problem of SCM and describe the common solution approaches.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Transportation & Logistics	All Bachelor Programs in the Transport & Logistics field

Supply Chain Management I

Course Code: DLBDSESCM01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

SCM proves to be an extremely multi-faceted construct from both a theoretical and a practical point of view. An adequate understanding of the problem dimensions and modes of action of (global) cross-company value creation networks requires a multidimensional approach. It starts by considering logistical processes, with modern process, flow, and network standards forming an important basis for SCM. On the basis of such an approach, students should gain a fundamental understanding of SCM. From the point of view of a holistic approach, it also makes sense to also examine a number of other typical problem areas in addition to the logistical challenges of this concept. This includes IT aspects of SCM (e.g., APS systems), and questions to do with the collaboration and coordination of network partners. This course also considers selected industry specific SCM solutions (ECR or VMI).

Course Outcomes

On successful completion, students will be able to

- explain the importance of cross-company value creation processes.
- understand common concepts for modeling cross-company value creation processes.
- understand dynamic effects in supply chains and can systematize their causes and effects.
- explain important theoretical concepts for describing the characteristics and challenges of cross-company value creation processes.
- explain the approaches and problem categories commonly used in the context of supply chain management.
- understand important reference and/or management models for the concretization of supply chain systems.
- name and detail important roles and tasks in the SCM network.
- deal with the coordination problem of SCM and describe the common solution approaches.

Contents

1. Fundamentals of the Supply Chain Concept
    - 1.1 Terminological and Conceptual Fundamentals
    - 1.2 Supply Chain Typology According to Otto
    - 1.3 Supply Chain Typology According to Bechtel/Jayaram
    - 1.4 Dynamic Aspects of Supply Chains

2. Selected Theoretical Concepts for the Supply Chain Concept
   - 2.1 New Institutional Economics
   - 2.2 Game Theory
   - 2.3 Network Approach
   - 2.4 Other Theoretical Additions

3. Supply Chain Management
   - 3.1 Basic Information on the Goals and Scope of SCM
   - 3.2 Popular Problem Areas of the SCM
   - 3.3 Supply Chain Management as an Evolutionary Step in Logistics
   - 3.4 Supply Chain Management as Cooperation Management

4. SCM Model
   - 4.1 Basic Information on the Term SCM Models
   - 4.2 SCOR Model
   - 4.3 SCM Task Model

5. SCM as a Coordination Problem
   - 5.1 Basic Information on the Concept of Coordination
   - 5.2 Coordination Concepts, Context, and Perspectives of SCM
   - 5.3 Coordination Instruments

Literature

Compulsory Reading

Further Reading

- Bowersox, J., Closs, D., & Cooper, M. B. (2020). Supply chain logistics management (5th ed.). McGraw Hill Education.
- Chopra, S., & Meindl, P. (2019). Supply chain management: Strategy, planning, and operation (7th ed., Global ed.). Pearson Education.
- Es-Satty, Asmaa; Lemghari, Radouane; Okar, Chafik. (2020). Supply Chain Digitalization Overview SCOR model implication. In: 2020 IEEE 13th International Colloquium of Logistics and Supply Chain Management (LOGISTIQUA) Logistics and Supply Chain Management (LOGISTIQUA), 2020 IEEE 13th International Colloquium of. :1-7 Dec, 2020; IEEE Language: English, Datenbank: IEEE Xplore Digital Library.
- Tarigan, Z. J. H., Siagian, H., & Jie, F. (2021). Impact of enhanced enterprise resource planning (ERP) on firm performance through green supply chain management. Sustainability, 13(8), article 4358.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Practice Exam
- ☑ Online Tests

Product Development in Industry 4.0

Module Code: DLBINGPE_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Dorian Mora (Product Development in Industry 4.0)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Product Development in Industry 4.0 (DLBINGPE01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Introduction to modern product development
- Fundamentals of product development
- Methods in the product development process
- Alternative design approaches
- Digitalization of product design
- Customized mass production
- Outlook: Digital engineering and operation

Learning Outcomes

Product Development in Industry 4.0

On successful completion, students will be able to

- recall the historical development of industrial production.
- name current trends in the context of the "fourth industrial revolution" and their impact on product development.
- know the basic methods in product development.
- know the traditional product development process from design theory.
- differentiate alternative approaches to product development.
- name selected tools in the context of digital and virtual product design.
- explain the lot size problem and determine lot sizes for traditional production types.
- distinguish traditional production types from modern strategies such as customized mass production and rapid manufacturing.
- name current approaches to the complete digitalization of product creation and production processes in terms of digital engineering.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology fields

Product Development in Industry 4.0

Course Code: DLBINGPE01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The aim of the course is to give students an overview of current approaches to modern product development in the context of Industry 4.0. Based on traditional methods and tools of product development, relevant alternative design approaches are described, which put the consumer in the center of the design. In addition, modern tools to support product design are presented with which an engineer can digitally capture and simulate both the static/geometric and dynamic properties of a product. In addition, aspects of customized mass production will be discussed and compared with traditional production types. As an outlook on future developments, current research approaches for consistently digitalized product development are presented.

Course Outcomes

On successful completion, students will be able to

- recall the historical development of industrial production.
- name current trends in the context of the "fourth industrial revolution" and their impact on product development.
- know the basic methods in product development.
- know the traditional product development process from design theory.
- differentiate alternative approaches to product development.
- name selected tools in the context of digital and virtual product design.
- explain the lot size problem and determine lot sizes for traditional production types.
- distinguish traditional production types from modern strategies such as customized mass production and rapid manufacturing.
- name current approaches to the complete digitalization of product creation and production processes in terms of digital engineering.

Contents

1. Introduction to Modern Product Development
   - 1.1 Terms of Industrial Production
   - 1.2 The Fourth Industrial Revolution
   - 1.3 Turnaround in the Factors of Production
   - 1.4 Trends in Product Development
2. Fundamentals of Product Development

- 2.1 Methods of Product Planning
- 2.2 Methods of the Solution Search
- 2.3 Selection and Evaluation of Alternatives

3. Methods in the Product Development Process
   - 3.1 Clarify Requirements
   - 3.2 Concept
   - 3.3 Draft
   - 3.4 Development

4. Alternative Design Approaches
   - 4.1 Design Thinking
   - 4.2 Personas
   - 4.3 Human-Centered Design According to ISO 9241-210
   - 4.4 Participatory Design
   - 4.5 Open Innovation
   - 4.6 Empathic Design

5. Digitalization of Product Design
   - 5.1 From Drawing Board to Digital Functional Model
   - 5.2 Computer-Aided Engineering
   - 5.3 Computer-Aided Quality
   - 5.4 Engineering and Product Data Management
   - 5.5 Simulation Data Management

6. Customized Mass Production
   - 6.1 Traditional Types of Production
   - 6.2 Lot Size Problem and Planning
   - 6.3 Mass Customization
   - 6.4 Rapid Manufacturing

7. Outlook: Digital Engineering and Operation
   - 7.1 Definition
   - 7.2 Fields of Application
   - 7.3 Data Mining
   - 7.4 Modeling of Dynamic Product Properties
   - 7.5 Provision of Information

Literature
Compulsory Reading
Further Reading ▪ Kull, H. (2015): Mass Customization. Opportunities, Methods, and Challenges for Manufacturers. Apress, Berkeley/New York. ▪ Olsen, D. (2015): The Lean product playbook: How to innovate with minimum viable products and rapid customer feedback. Wiley, Hoboken, NJ. ▪ Stark, J. (2022): Product Lifecycle Management (Volume 1): 21st Century Paradigm for Product Realisation (Decision Engineering) (English Edition). Fifth Edition. Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Global Corporations and Globalization

Module Code: DLBINTGUG_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Sebastian Stütz (Global Corporations and Globalization)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Global Corporations and Globalization (DLBLOGC101_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- History and Development of Globalisation
- International Marketing
- International Operation
- International Personnel Management
- International Financing
- International Procurement and Distribution

Learning Outcomes

Global Corporations and Globalization

On successful completion, students will be able to

- present the history of globalisation and identify and explain significant stages of development.
- identify and classify current trends in globalization and localization.
- recall basic knowledge in the fields of business administration, marketing and human resources management and extend it to meet the special requirements in internationally operating companies .
- explain offshoring and outsourcing and outline the opportunities and risks of these placements .
- explain the particularities of international procurement and distribution and develop resulting possibilities and limits.
- identify cultural differences and assess their significance for operating in international business.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programmes in the Business field

Global Corporations and Globalization

Course Code: DLBLOGC101_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Students grasp the mechanisms that led to globalization and can classify current trends both towards globalization and, conversely, towards localization. Building on the basic knowledge that students have acquired in general business studies about the basic functions in a company, this course analyses and discusses the special requirements that a global engagement places on a company and its functions.

Course Outcomes

On successful completion, students will be able to

- present the history of globalisation and identify and explain significant stages of development.
- identify and classify current trends in globalization and localization.
- recall basic knowledge in the fields of business administration, marketing and human resources management and extend it to meet the special requirements in internationally operating companies .
- explain offshoring and outsourcing and outline the opportunities and risks of these placements .
- explain the particularities of international procurement and distribution and develop resulting possibilities and limits.
- identify cultural differences and assess their significance for operating in international business.

Contents

1. History and Development of Globalisation
   - 1.1 Globalization v1.0 according to Niall Ferguson
   - 1.2 History of Globalisation
   - 1.3 Influencing Factors of Economic and Cultural Globalization
   - 1.4 The Tension between Globalization and Localization
   - 1.5 Social Aspects of Globalisation and Corporate Responsibility

2. International Marketing
   - 2.1 International Consumer Behaviour
   - 2.2 Market Research

2.3 Standardization and Adaptation
2.4 International Branding
2.5 Pricing Strategies
2.6 International Marketing Communications

3. International Operation
   3.1 Offshoring and Outsourcing
   3.2 Global Production Networks
   3.3 Global Logistics

4. International Personnel Management
   4.1 Local and International Personnel Management
   4.2 Expatriate Management
   4.3 Localization of Personnel
   4.4 International Human Resources Development

5. International Financing
   5.1 Institutions in the International World of Finance
   5.2 International Financing and its Procedures

6. International Procurement
   6.1 Reasons and Strategies of Global Sourcing
   6.2 Risks of International Procurement
   6.3 International Distribution Policy

Literature

Compulsory Reading

Further Reading

- Barmeyer, C., Bausch, M., Mayrhofer, U. (2021). Constructive Intercultural Management, Edward Elgar Publishing.
- Cateora, P.R., Money, R.B., Gilly, M. C., Graham, J.L. (2020). International Marketing (18th ed.). McGrawHill.
- Lasserre, P., Monteiro, F. (2018). Global strategic management (5th ed.). Bloomsbury Academic.
- Madura, J., Fox, R. (2020). International Financial Management (5th ed.). Cengage.
- Torrington, D., Hall, L., Taylor, S., Atkinson, C. (2020). Human resource management. Pearson.
- 2018 Lasserre, P., Monteiro, F. Global strategic management. Bloomsbury Academic.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Global Sourcing

Module Code: DLBINTGS_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Jonathan Black-Branch (Global Sourcing)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Global Sourcing (DLBLOGC102_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Make-or-buy decisions, in- & outsourcing strategies
- Procurement concepts, strategies and processes
- Conducting negotiations in purchasing:
- Procurement market research & analysis
- Information and communication technology in purchasing and procurement
- optimization of interfaces between purchasing and other corporate functions
- Organizational aspects of procurement

Learning Outcomes

Global Sourcing

On successful completion, students will be able to

- describe basic strategies, concepts and processes of global procurement and analyze, evaluate and apply them with a regard to potential fields of application.
- identify central planning principles and methods of purchasing and evaluate them with regard to their fields of application in practice and their scientific and methodological foundation.
- explain the operational and strategic importance of purchasing and procurement for the entire supply chain.
- name and apply methods and applications that are necessary for the planning and execution of purchasing and procurement processes or that can be used as control levers.
- independently identify, collect, analyze and evaluate data and information for specific procurement tasks
- work on practical tasks in a goal-oriented and efficient manner.
- design and carry out further studies with a scientific orientation in the field of purchasing and procurement under guidance.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programs in the Business field

Global Sourcing

Course Code: DLBLOGC102_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Students learn the basic concepts and methods of global procurement and global purchasing. They will study the operation of globally connected supply and logistics networks. Another aspect is the discussion of cultural peculiarities and specificities focusing on negotiations in an international context.The topics considered in the course are dealt with at both the strategic and the operational level with a view to the specific handling processes, necessary information flows, as well as legal and formal frameworks.

Course Outcomes

On successful completion, students will be able to

- describe basic strategies, concepts and processes of global procurement and analyze, evaluate and apply them with a regard to potential fields of application.
- identify central planning principles and methods of purchasing and evaluate them with regard to their fields of application in practice and their scientific and methodological foundation.
- explain the operational and strategic importance of purchasing and procurement for the entire supply chain.
- name and apply methods and applications that are necessary for the planning and execution of purchasing and procurement processes or that can be used as control levers.
- independently identify, collect, analyze and evaluate data and information for specific procurement tasks
- work on practical tasks in a goal-oriented and efficient manner.
- design and carry out further studies with a scientific orientation in the field of purchasing and procurement under guidance.

Contents

1. Basics
    - 1.1 Procurement in the Context of Internationalization
    - 1.2 Importance of Purchasing and Procurement in the Company
    - 1.3 Trends and Goals of Purchasing and Procurement
    - 1.4 National, Regional and Global Supply Networks
    - 1.5 Legal Framework Conditions on a National and International Level

9. Optimization Interfaces Between Purchasing and Other Corporate Functions
   - 9.1 Overview of Organizational Models
   - 9.2 Organizational Forms of Purchasing

10. Organizational Aspects of Procurement
   - 10.1 Variants of the Organizational Structure
   - 10.2 Decision-Making Aids

Literature

Compulsory Reading

Further Reading

- Helmold, M. (2020). Lean management and kaizen: Fundamentals from cases and examples in operations and supply chain management. Springer.
- Helmold, M., & Terry, B. (2016). Global sourcing and supply management excellence in China: Procurement guide for supply experts. Singapore Springer.
- Lane, H. W., & Maznevski, M. L. (2014). International management behavior: Global and sustainable leadership (7th ed.). Wiley.
- Lewin, A. Y. (2011). Trade in services: The global sourcing of business services. Emerald Group Publishing Limited.
- Tolbert, P. S., & Hall, R. H. (2016). Organizations structures, processes, and outcomes (10th ed.). Routledge Taylor & Francis Group.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Sustainability

Module Code: DLBBAS-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Karsten Hurrelmann (Sustainability)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Sustainability (DLBBAS01-01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Fundamentals of Sustainability
- Levels of Sustainability
- Frameworks for Sustainability
- Technical Aspects of Sustainability
- Sustainability Reporting
- Examples of Corporate Sustainability Management Programs

Learning Outcomes

Sustainability

On successful completion, students will be able to

- understand the concept sustainability.
- contextualize sustainability in ethical and economical terms.
- explain international frameworks of sustainability.
- understand the technical implications of sustainability.
- develop corporate reporting along the triple bottom line.
- critically analyze sustainability management examples from professional practice.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Quality & Sustainability Management	All Bachelor Programmes in the Management field

Sustainability

Course Code: DLBBAS01-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course gives students insights into sustainability. It presents fundamentals and definitions and explains the ethical and economic context of sustainability, the various levels of its occurrence and relevant international frameworks. Furthermore, students will familiarize themselves with product development, product life cycle planning and triple bottom line reporting from a sustainability viewpoint. Real life cases of corporate sustainability programs provide insights into different examples from professional practice, thus linking theory and practice.

Course Outcomes

On successful completion, students will be able to

- understand the concept sustainability.
- contextualize sustainability in ethical and economical terms.
- explain international frameworks of sustainability.
- understand the technical implications of sustainability.
- develop corporate reporting along the triple bottom line.
- critically analyze sustainability management examples from professional practice.

Contents

1. Fundamentals of Sustainability
   - 1.1 History and Definition
   - 1.2 Sustainability in the Context of Ethics
   - 1.3 Sustainability in the Context of Business: Corporate Social Responsibility
2. Levels of Sustainability
   - 2.1 Societal Level
   - 2.2 Corporate Level
   - 2.3 Individual Level
3. Frameworks for Sustainability
   - 3.1 Sustainable Development Goals
   - 3.2 ISO 14001 and ISO 26000
   - 3.3 Industry Standards on Sustainability

4. Technical Aspects of Sustainability
   - 4.1 Life Cycle Assessment
   - 4.2 Research and Product Development
   - 4.3 Product-Service System Design

5. Sustainability Reporting
   - 5.1 Evolution of Sustainability Reporting
   - 5.2 Global Reporting Initiative
   - 5.3 Greenhouse Gas Protocol

6. Examples of Corporate Sustainability Management Programs
   - 6.1 Case 1: Patagonia
   - 6.2 Case 2: Easee
   - 6.3 Case 3: Island Grower Caribbean

Literature

Compulsory Reading

Further Reading

- Jarmai, K. (2020): Learning from Sustainability-Oriented Innovation. In: Jarmai, K. (ed.): Responsible Innovation: Business Opportunities and Strategies for Implementation. SpringerBriefs in Research and Innovation Governance, Dordrecht, p. 19-35.
- Lehman, C. R. (2015): Sustainability and Governance. Advances in Public Interest Accounting. Vol. 18, 1st ed. Emerald Group Publishing Limited, Bingley, UK.
- Mazijn B./Revéret J.P. (2015): Life Cycle Sustainability Assessment: A Tool for Exercising Due Diligence in Life Cycle Management. In: Sonnemann, G./Margni, M. (Eds.): Life Cycle Management. Springer, Dordrecht. p. 51-63.
- Shmeleva, I. A./Shmelev, S. (2012): Sustainability Analysis: An Interdisciplinary Approach. Palgrave Macmillan, Houndmills, UK.
- Walker D. H.T./Lloyd-Walker B. M. (2015): Triple Bottom Line Implications. In: Collaborative Project Procurement Arrangements. Project Management Institute, Pennsylvania, USA.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Practice Exam
- ☑ Online Tests

Digital Future Industry

Module Code: DLBLODFI_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

(Digital Future Industry)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Digital Future Industry (DLBLOISCM201_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- IT systems and digital models
- Technology innovations as drivers of Industry 4.0
- Innovative business models through digitization
- Cyber-physical systems and decentralized control structures in digital value chains
- Fields of application and potential uses of big data applications and cloud computing
- Work and education in the age of digitalization
- Future production systems and value chains ("smart" factory)

Learning Outcomes

Digital Future Industry

On successful completion, students will be able to

- place the importance of process thinking in logistics and in the context of supply chain management, and to name the main features of processes.
- demarcate IT systems for the depiction and support of operational processes, and to describe potentials through digitalization in the area of modeling in the form of the digital twins.
- name and characterize the different phases of the industrial revolution.
- show societal developments and implications for the working world as a result of digitalization and Industry 4.0.
- name technological developments and innovations as drivers of Industry 4.0, and describe the opportunities created by digitalization for the development of innovative business models and apply them in an operational context.
- recognize the potentials of decentralized control structures in digital value networks opened up by digitalization, as well as describe cyber-physical systems and their functionality and importance in the context of real-time control of industrial production.
- structurally present the implications and potentials of digitalization for industrial processes and industrial production.
- show improved analysis capabilities through the use of big data applications and mirror them in operational practice, as well as explain the importance of cloud computing in an industrial context.
- describe the impact of digitalization on the design of future production systems and value chains from a higher-level perspective, and explain the connections to other societal tasks and areas such as education and research.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Transportation & Logistics	All Bachelor Programs in the Management field

Digital Future Industry

Course Code: DLBLOISCM201_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

By participating in this course, students gain a comprehensive insight into questions of digitalization in industrial production and value networks. On one hand, the main drivers of Industry 4.0 in the form of technological innovations and their application and deployment fields are addressed and classified according to their potential to improve operational processes and discussed in the context of developing innovative business models. On the other hand, societal challenges of digitalization , particularly with regard to the working world of tomorrow and the design of the human-machine interface, are presented and put up for discussion.

Course Outcomes

On successful completion, students will be able to

- place the importance of process thinking in logistics and in the context of supply chain management, and to name the main features of processes.
- demarcate IT systems for the depiction and support of operational processes, and to describe potentials through digitalization in the area of modeling in the form of the digital twins.
- name and characterize the different phases of the industrial revolution.
- show societal developments and implications for the working world as a result of digitalization and Industry 4.0.
- name technological developments and innovations as drivers of Industry 4.0, and describe the opportunities created by digitalization for the development of innovative business models and apply them in an operational context.
- recognize the potentials of decentralized control structures in digital value networks opened up by digitalization, as well as describe cyber-physical systems and their functionality and importance in the context of real-time control of industrial production.
- structurally present the implications and potentials of digitalization for industrial processes and industrial production.
- show improved analysis capabilities through the use of big data applications and mirror them in operational practice, as well as explain the importance of cloud computing in an industrial context.
- describe the impact of digitalization on the design of future production systems and value chains from a higher-level perspective, and explain the connections to other societal tasks and areas such as education and research.

Contents

Literature
Compulsory Reading
Further Reading ▪ Ghobakhloo, M. (2018). The future of manufacturing industry: A strategic roadmap toward Industry 4.0. Journal of Manufacturing Technology Management, 29(6), 910-936. ▪ Kamble, S. S., Mor, R. S., & Belhadi, A. (2023). Digital transformation and Industry 4.0 for sustainable supply chain performance. Springer. ▪ Paksoy, T., & Deveci, M. (2023). Smart and sustainable operations and supply chain management in Industry 4.0. Routledge. ▪ Singh, G., Goel, R., & Garg, V. (2023). Industry 4.0 and the digital transformation of international business. Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	

Fundamentals of Product Management

Module Code: DLBPROGPM_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Adrienne Steffen (Fundamentals of Product Management)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Fundamentals of Product Management (DLBPROGPM01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Introduction to product management
- Market analysis
- Product strategy
- Idea generation and validation
- Product and market tests
- Market launch
- Product management after launch

Learning Outcomes

Fundamentals of Product Management

On successful completion, students will be able to

- prepare market analyses and product strategies
- generate and validate new product ideas
- plan and execute product and market tests
- organize the market launch and successfully place the products on the market
- manage products successfully after market launch.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Marketing & Sales	All Bachelor Programs in the Marketing & Communication field

Fundamentals of Product Management

Course Code: DLBPROGPM01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Product management is a function that deals with the planning, management and control of products and services during the entire product life cycle. The product manager, as the main person responsible for a product, has to master various disciplines in order to successfully manage his product. The course Fundamentals of Product Management provides the appropriate background knowledge to create market analyses and develop product strategies. Special attention is paid to the generation and validation of new product ideas, the testing and introduction of products on the market and the management of products after launch.

Course Outcomes

On successful completion, students will be able to

- prepare market analyses and product strategies
- generate and validate new product ideas
- plan and execute product and market tests
- organize the market launch and successfully place the products on the market
- manage products successfully after market launch.

Contents

1. Introduction to product management
   - 1.1 Concept, goals and tasks of product management
   - 1.2 Product quality and corporate success
   - 1.3 Product categories
2. Market analysis
   - 2.1 Basics of market analysis
   - 2.2 Market research
   - 2.3 Methods of market analysis
3. Product strategy
   - 3.1 Basics of the product strategy
   - 3.2 Goals and positioning
   - 3.3 Evaluation and selection of product strategies

4. Idea generation and validation
   - 4.1 Basics of innovation management
   - 4.2 Idea generation
   - 4.3 Idea and market validation

5. Product and market tests
   - 5.1 Importance of the test phase
   - 5.2 Product tests
   - 5.3 Market tests

6. Market launch
   - 6.1 Basics for market entry
   - 6.2 Market entry strategies
   - 6.3 Distribution
   - 6.4 Serial production

7. Product management after market launch
   - 7.1 Product life cycle
   - 7.2 Methods and concepts of product management
   - 7.3 Customer satisfaction
   - 7.4 Interface Management

Literature

Compulsory Reading

Further Reading

- Cagan, M. (2017). INSPIRED: How to create tech products customers love (2nd ed.). Wiley.
- LeMay, M. (2022). Product management in practice: A practical, tactical guide for your first day and every day after (2nd ed.). O'Reilly.
- Perri, M. (2018). Escaping the build trap: How effective product management creates real value. O'Reilly.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Managerial Economics

Module Code: DLBBWME_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Dr. Tolga Ülkü (Managerial Economics)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Managerial Economics (DLBBWME01_E)

Module Exam Type	
Module Exam Study Format: Duales myStudium Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Basics
- The Invisible Hand of the Market
- Consumer Decisions
- Business Decisions I: Full Competition
- Business Decisions II: Partial Competition
- Business Decisions III: Game Theory
- Advanced Microeconomics

Learning Outcomes

Managerial Economics

On successful completion, students will be able to

- understand basic economic interrelationships and apply them to different markets.
- explain the importance of supply, demand and market balance.
- assess the determinants of consumers' willingness to pay.
- discuss the determinants of production decisions and identify peak entrepreneurial strategies.
- assess the influence of different types of markets on production and price decisions.
- analyse strategic interactions between companies.
- critically question traditional economic models on the basis of findings from information and behavioural economics.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Economics	All Bachelor Programs in the Business field

Managerial Economics

Course Code: DLBBWME01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The source for (almost) all economic questions is the issue of scarcity. Building on this insight, this course considers three central elements. First, an analysis of the interplay between supply and demand on markets is made. Secondly, the course will consider the development of insights into the behaviour of consumers in markets. In a third part, the course will focus on entrepreneurial decisions that depend, among other things, on production technology available and competitive conditions in markets. These three core elements are taught from an application-oriented standpoint, in which references to (current) challenges of the management of companies are established. The course includes both the examination of economic theories and their application in business practice.

Course Outcomes

On successful completion, students will be able to

- understand basic economic interrelationships and apply them to different markets.
- explain the importance of supply, demand and market balance.
- assess the determinants of consumers' willingness to pay.
- discuss the determinants of production decisions and identify peak entrepreneurial strategies.
- assess the influence of different types of markets on production and price decisions.
- analyse strategic interactions between companies.
- critically question traditional economic models on the basis of findings from information and behavioural economics.

Contents

1. Basics
   - 1.1 Definitions & Main Topics of Economics
   - 1.2 Thinking like an Economist
2. The Invisible Hand of the Market
   - 2.1 Supply and Demand
   - 2.2 Market Balance
   - 2.3 Flexibility
   - 2.4 Applications

Literature
Compulsory Reading
Further Reading ▪ Acemoglu, D., Laibson, D., & List, J. A. (2018). Microeconomics (Global edition, 2nd ed.). Pearson. ▪ Case, K. E., Fair, R. C., & Osten, S. M. (2019). Principles of economics (Global edition, 13th ed.). Harlow. ▪ Keat, P. G., & Young, P. K. Y. (2013). Managerial economics (Global Edition, 7th ed.). Pearson Education Limited. ▪ Leyton-Brown, K., & Shoham, Y. (2008). Essentials of game theory: A concise multidisciplinary introduction. Morgan & Claypool. ▪ Parkin, M. (2019). Economics (13th ed.). Harlow. ▪ Pindyck, R. S., & Rubinfeld, D. L. (2017). Microeconomics (9th ed.). Pearson.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

Introduction to New Work

Module Code: DLBNWENW_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Stefanie Rödel (Introduction to New Work)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Introduction to New Work (DLBNWENW01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Working World of the Future
- Concept Development
- New Work as an Interdisciplinary Approach
- Megatrends
- Effects of Agile Organization Forms
- Leadership and Cooperation in New Work
- Empowerment
- Competence Development
- General Conditions

Learning Outcomes

Introduction to New Work

On successful completion, students will be able to

- identify and understand the challenges of technological and societal change.
- transfer the emerging challenges to human resources management and the leadership culture in companies.
- understand the concepts of agile and fluid organizations and the resulting consequences.
- identify solutions for complex environmental factors on leadership and human resources management.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Human Resources	All Bachelor Programs in the Human Resources field

Introduction to New Work

Course Code: DLBNWENW01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

More and more companies leave their bureaucratic systems and hierarchical structures behind and adopt an agile style of work. Knowledge is both increasing and outdated at an increasing rate. Autonomy and creativity become of greater importance in more and more companies. Increasingly, processes and departments are set up according to agile principles. Work experiences an increasing dissolution of boundaries with both positive and negative effects. The question of how structures and corporate culture adapt better and faster to shorter innovation cycles and environmental changes affects all companies and their human resources management. It is more important than ever for knowledge and qualifications to be state of the art; consequently continuous learning needs to take a more prominent role in the work place. In the context of social and demographic change, work and organizations are moving further and further away from Taylorism and towards integral, evolutionary organizations whose work is characterized by self-management, a holistic view and meaningful tasks. This is accompanied by a change in orientation, away from bureaucracy towards democratic structures and empowerment. This course provides an introduction to the complex and contemporary theme of the new working world and work structure. Starting with a classification of the topic, we will define social megatrends as essential factors influencing human resource management and organization. Building on this, we will discuss the dipole of rigid and agile organizational structures and the resulting effects on leadership, personnel management and employees. Further, we will look at the concepts of cooperation and leadership during the implementation of new work structures and methods as well as necessary competencies. Competence development addresses how learning, attitudes and abilities are set to interact to provide companies with agile processes. Finally, we will critically reflect upon the new work concept, looking at advantages and disadvantages for those involved, predominantly in the context of legal and social conditions.

Course Outcomes

On successful completion, students will be able to

- identify and understand the challenges of technological and societal change.
- transfer the emerging challenges to human resources management and the leadership culture in companies.
- understand the concepts of agile and fluid organizations and the resulting consequences.
- identify solutions for complex environmental factors on leadership and human resources management.

Contents

Literature
Compulsory Reading
Further Reading ▪ Bergmann, F. (2019): New Work, New Culture: Work We Want and a Culture That Strengthens Us. Zero Books, Washington, S. 7–19. ▪ Bernstein, E. et al. (2016): Beyond the Holacracy Hype. Harvard Business Review, Harvard. ▪ Felin, T./Powell, T. C. (2016): Designing organizations for dynamic capabilities. In: California Management Review, Journal 58, Magazine 4, p. 78–96. ▪ Frithjof, B. (2019): New work, new culture: work we want and a culture that strengthens us, Winchester, UK ; Washington, USA: Zero Books. ▪ Haapakangas, A. et al. (2018): Self-rated productivity and employee well-being in activity based offices: the role of environmental perceptions and workspace use. Building and Environment, Heft 145, S. 115–124. ▪ Siangchokyoo, Nathapon; Klinger, Ryan L. (2022): Shared Leadership and Team Performance: The Joint Effect of Team Dispositional Composition and Collective Identification. In: Group & Organization Management. Feb2022, Vol. 47 Issue 1, p109-140. 32p.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Project: New Work

Module Code: DLBPEPNW_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Anna Meindl (Project: New Work)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: New Work (DLBPEPNW01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Portfolio Study Format: myStudies Portfolio	

Weight of Module

see curriculum

Module Contents

The course deals with the managerial, organizational and workplace changes affecting companiesas a result of megatrends.

Learning Outcomes

Project: New Work

On successful completion, students will be able to

- define and explain the term New Work.
- develop a grasp for changes in work, leadership and organization in the wake of important megatrends and their effects.
- explain the stages of change processes in the context of the New Work concept and to implement them in an example project.
- apply important methods and tools in change processes.
- reflect and document the most important lessons learned for change processes.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Human Resources	All Bachelor Programs in the Human Resources field

Project: New Work

Course Code: DLBPEPNW01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The term New Work, as a collective term for all changes to work, leadership and organization, is the focus of this course and will be explored by the students using practical examples. On the basis of a project from company HR practice with a focus on New Work, a portfolio will be developed in which the students reflect and document their most important learning experiences. This will allow the students to further develop ttheir echnical, methodological, personal and social skills.

Course Outcomes

On successful completion, students will be able to

- define and explain the term New Work.
- develop a grasp for changes in work, leadership and organization in the wake of important megatrends and their effects.
- explain the stages of change processes in the context of the New Work concept and to implement them in an example project.
- apply important methods and tools in change processes.
- reflect and document the most important lessons learned for change processes.

Contents

- New Work deals with changes resulting from megatrends which in turn impact the work, leadership and organizational aspects. These megatrends can be digitalization, globalization, demographic trends or changing values. Possible contents of the course are:
  - new models for workplace design (e.g. Co-Working space)
  - new models of collaboration (e.g. virtual teams, mixed-age teams)
  - new models of leadership (e.g. shared leadership, agile leadership)
  - agile organization (e.g. Holocracy)
  - Effects on staff development (e.g. shifting the responsibility for lifelong learning to the employee)

  The process of change that accompanies the introduction of these new concepts is to be exemplified and the important learning experiences of the students reflected and documented.

Literature

Compulsory Reading

Further Reading

- Cameron, Esther & Green, Mike (2015) Making Sense of Change Management: A Complete Guide to the Models, Tools and Techniques of Organizational Change, 4th Ed., Kogan Page Limited, London, UK.
- Harteis C. (eds) The Impact of Digitalization in the Workplace.An Educational View. Springer, Cham.
- Keller, Scott, and Schaninger, Bill (2019) Beyond Performance 2.0: A Proven Approach to Leading large-Scale Change, McKinsey & Company, John Wiley and Sons.
- Kotter, John P. (2012) Leading Change, Harvard Business Review Press.
- On Change Management (2011), Harvard Business Review Press, Boston MA.
- Merlijn Venus, Daan Stam, and Daan van Knippenberg (2018) Research: To Get People to Embrace Change, Emphasize What Will Stay the Same, Harvard Business Review, August 15, 2018.
- Hatum, Andres (2013) The New Workforce Challenge - How Today's Leading Companies Are Adapting to the Future. PagraveMacmillan.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Portfolio

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Portfolio

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Business Consulting I

Module Code: DLBMEBC1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Johannes Ritz (Business Consulting I)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Business Consulting I (BWCN01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Introduction to Business Consulting
- Forms and Functions of Business Consulting
- The Market for Business Consulting
- History, Pioneers and Concepts
- Consulting Fields

Learning Outcomes

Business Consulting I

On successful completion, students will be able to

- understand the various definitions of business consulting.
- explain the tasks and approaches of business consultants.
- name the characteristics of business consultancies.
- explain business consulting as a highly specialized service.
- identify the specifics of the consultant-client relationship.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programs in the Business field

Business Consulting I

Course Code: BWCN01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Business consulting is a professional service whose overall economic significance is increasing. Business consultants provide professional consulting services for client companies. This requires the ability to analyze and evaluate specific corporate and market situations with the help of modern management concepts. Based on their analyses, business consultants make recommendations for optimizing corporate strategies, structures and processes and - if desired - accompany them during implementation and realization. In order to fulfill successfully the various functions and tasks of business consulting, business consultants require a differentiated profile of technical-methodical and personal-social competencies. The center of professional competencies is composed of basic and specialized knowledge in consulting and business administration. They include analytical skills for understanding corporate and market situations as well as the ability to plan, implement and control consulting projects. The development of personal and social competences aims at the client-centeredness of the students in the sense of the ability to adapt to the individual consulting needs of clients.

Course Outcomes

On successful completion, students will be able to

- understand the various definitions of business consulting.
- explain the tasks and approaches of business consultants.
- name the characteristics of business consultancies.
- explain business consulting as a highly specialized service.
- identify the specifics of the consultant-client relationship.

Contents

1. Introduction to Business Consulting
   - 1.1 Business Consulting – Management Consulting
   - 1.2 Business Consulting as a Subject of Science
2. History, Pioneers, and Concepts
   - 2.1 History of Business Consulting
   - 2.2 Business Consulting Concepts
3. Forms and Functions of Business Consulting

3.1 The External Consulting Process
3.2 Inhouse Consulting

4. The Market for Business Consulting
4.1 Data, Structures, and Trends
4.2 Consulting Companies in Germany

5. Consulting Fields
5.1 Strategy Consulting
5.2 Organization and Transformation Consulting
5.3 IT Consulting

Literature

Compulsory Reading

Further Reading

- Cerruti, C., Tavoletti, E., & Grieco, C. (2019). Management consulting: a review of fifty years of scholarly research. Management Research Review, 42(8), 902-925.
- Curuksu, J.D. (2018). Data Driven. An Introduction to Management Consulting in the 21st Century. Cham, Switzerland: Springer.
- da Costa, R. L., et al. (2013). The „Fashionable Knowledge“ of Management Consulting. Journal of Management and Sustainability, 3(3), 180-188.
- FEACO. (2019). Survey of the European Management Consultancy 2018/2019. Retrieved from http://www.feaco.org/sites/default/files/sitepagefiles/Feaco.Survey%202018-2019.pdf
- Kubr, M. (2002). Management Consulting: A Guide to the Profession. (4th ed). Genf: International Labour Office.
- Nippa, M., & Petzold, K. (2002). Economic functions of management consulting firms – an integrative theoretical framework. In Academy Of Management Proceedings & Membership Directory, B1–B6.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Business Consulting II

Module Code: DLBMEBC2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Johannes Ritz (Business Consulting II)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Business Consulting II (BWCN02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Business Modell of Business Consulting
- Forms and Functions of Business Consulting
- Marketing of Consulting Services
- Consultant Liability, Contract Drafting and Professional Law
- The Consulting Project

Learning Outcomes

Business Consulting II

On successful completion, students will be able to

- explain the special framework conditions of consulting companies.
- identify the approaches in marketing for consulting services.
- explain the strategic and operational direction of consulting companies.
- understand the challenges of human resource management in consulting companies.
- explain the operational phases of the consulting process.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programs in the Business field

Business Consulting II

Course Code: BWCN02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Business consultants offer professional consulting services for client companies. The object of business consulting is therefore the acquisition, planning and implementation of business consulting projects. The content of these consulting projects is diverse and, depending on the task, can include aspects of strategic corporate management, challenges in the area of financing and cost reduction, the introduction of new technologies, working methods and systems, internal communication, restructuring, mergers/acquisitions or outsourcing of companies or individual company divisions. Consulting projects and consulting processes are characterized by recurring elements, the understanding and application of which significantly influence the success of a consulting service. The competence and quality of contract acquisition and project management is determined by the management of the consulting firm itself. Depending on the consulting philosophy, consulting concept, consulting organization and service marketing, success or failure is reached in consultant-client relationships. Participation in the course requires successful completion of the Business Consulting I course.

Course Outcomes

On successful completion, students will be able to

- explain the special framework conditions of consulting companies.
- identify the approaches in marketing for consulting services.
- explain the strategic and operational direction of consulting companies.
- understand the challenges of human resource management in consulting companies.
- explain the operational phases of the consulting process.

Contents

1. The Business Model of Business Consulting
   - 1.1 The Business Consultancy as a Professional Service Firm
   - 1.2 The Value Creation Model of Business Consulting
   - 1.3 The Market Environment of the Consulting Company
2. The Management of the Consultancy Company
   - 2.1 Fields of Action and Decision-Making for the Management of Business Consulting Companies
   - 2.2 Normative and Strategic Fields of Action and Decision-Making

2.3 Personnel and HR Management in the Consulting Company

3. Marketing of Consulting Services
   - 3.1 Special Features of Service Marketing
   - 3.2 Strategic Marketing of Consulting Companies
   - 3.3 Relationship Marketing of Consulting Companies

4. Consultant Liability, Contract Drafting and Professional Law
   - 4.1 Consultant Liability
   - 4.2 Contract Drafting
   - 4.3 Legal Issues of Professional Practice

5. The Consulting Project
   - 5.1 Requirements
   - 5.2 Settings and Techniques
   - 5.3 Consulting Phase

Literature

Compulsory Reading

Further Reading

- Block, P. (2011). Flawless consulting: A guide to getting your expertise used (3rd ed.). Pfeiffer.
- Chereau, P., & Meschi, P.-X. (2018). Strategic consulting: Tools and methods for successful strategy missions. Palgrave Macmillan.
- Kaiser, S., & Others. (2015). Human Resource Management in Professional Service Firms: Learning from a framework for research and practice. Zeitschrift Für Personalforschung, 29(2), 77-101.
- Kubr, M. (2002). Management consulting: A guide to the profession (4th ed.). International Labour Office.
- Skjølsvik, T., Pemer, F., & Løwendahl, B. (2017). Strategic management of professional service firms: Reviewing ABS journals and identifying key research themes. Journal Of Professions & Organization, 4(2), 203-239.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Digital Finance and Controlling

Module Code: DLBFMDFC_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Franz Isselstein (Digital Finance and Controlling)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Digital Finance and Controlling (DLBFMDFC01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Written Assignment Study Format: myStudies Written Assessment: Written Assignment	

Weight of Module

see curriculum

Module Contents

- Fundamentals and Basic Concepts of Digitization
- Digitization of Processes in Finance & Controlling
- Requirements of Digitization for IT Systems in Controlling
- Effects of Digitization on Organization, Roles and Competence Profiles in Controlling
- Conceptual Principles for the Development of Digitization Measures
- Controlling of Digital Business Models

Learning Outcomes

Digital Finance and Controlling

On successful completion, students will be able to

- identify opportunities and potentials of digitization in finance & controlling.
- understand relevant digitization technologies and their possible applications.
- assess efficiency potentials through digitization of core processes.
- understand essential requirements of digitization on IT systems.
- identify the effects of digital transformation on the organization, tasks, and competence profiles in finance & controlling.
- determine the degree of digitization in controlling in order to develop a digitization strategy.
- understand the special features of controlling digital business models.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Finance & Tax Accounting	All Bachelor Programs in the Business field

Digital Finance and Controlling

Course Code: DLBFMDFC01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Digitization is currently leading to disruptive changes in industries, sectors and companies. Traditional business models (e.g., in retail banking or hotel bookings) are increasingly being replaced by digital business models (i.e., fintechs or platforms such as booking.com). Companies with traditional business models are digitizing their operational processes (e.g., in production or sales) in order to remain competitive.Support functions such as HR or controlling are also taking advantage of the opportunities offered by digital transformation in order to optimize the efficiency of their respective core processes. In this respect, controlling is not only dealing with the management of digitization initiatives in the operational areas of the company, it must also evaluate what opportunities and efficiency potential digitization offers in finance & controlling itself. This course provides students with an overview of the conceptual principles and current developments of digitization in finance & controlling. Students are introduced to the relevant digitization technologies and will understand how digitization affects processes, systems, organizations and the necessary competence profiles of a company´s employees. Various practical examples will be used to show how companies successfully use tools and technologies to improve the efficiency of controlling processes.Moreover, students will learn how the company's current level of digitization is determined by using a maturity model in order to develop a digitization strategy. Finally, this course presents the special features of controlling in digital business models.

Course Outcomes

On successful completion, students will be able to

- identify opportunities and potentials of digitization in finance & controlling.
- understand relevant digitization technologies and their possible applications.
- assess efficiency potentials through digitization of core processes.
- understand essential requirements of digitization on IT systems.
- identify the effects of digital transformation on the organization, tasks, and competence profiles in finance & controlling.
- determine the degree of digitization in controlling in order to develop a digitization strategy.
- understand the special features of controlling digital business models.

Contents

1. Fundamentals and Basic Concepts of Digitization
    - 1.1 Context of Digitization in Controlling: VUCA and Industry 4.0
    - 1.2 Relevant Digitization Technologies at a Glance

Literature

Compulsory Reading

Further Reading

- Chong, S. & Rahman, A. & Narayan A. K. (2022). Guest Editorial: Accounting in Transition: Influence of Technology, Susatainability and Diversity. Pacific Accounting Review 34(4), 517–525.
- de Bruin T. & Rosemann M. & Freeze R. & Kulkarni U. (2005). Understanding the Main Phases of Developing a Maturity Assessment Model. In ACIS 2005 Proceedings Sydney, Australia.
- Drury, C. (2022). Management Accounting for Business (8th ed.). Cengage. Chapter 16.
- Hofmann, P. & Samp, C. & Urbach, N. (2019). Robotic Process Automation. Electronic Markets 30, 99 –106.
- Möller, K. & Schäffer, U. & Verbeeten, F. (2020). Digitalization in Management Accounting and Control: An Editorial. Journal of Management Control 31, 1–8.
- Rummel, F. & Hüsig, S & Steinhauser, S. (2021). Two Archetypes of Business Model Innovation Processes for Manufacturing Firms in the Context of Digital Transformation. R&D Management 52(4), 685–703.
- Wirtz, B. W. (2019). Digital Business Models. Springer Nature.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Business Psychology

Module Code: DLBWPWPS_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Stephan de la Rosa (Business Psychology)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Business Psychology (DLBMPS01_E)

Module Exam Type

Module Exam

Study Format: Distance Learning
Exam, 90 Minutes

Study Format: myStudies
Exam, 90 Minutes

Split Exam

Weight of Module

see curriculum

Module Contents

- General Theories of Business Psychology
- Psychology of Microeconomic Processes
- Psychology of Macroeconomic Processes
- Psychology of Change
- The Learning Organization

Learning Outcomes

Business Psychology

On successful completion, students will be able to

- describe central economic assumptions and their influencing factors and critically question them in relation to concrete action and decision making.
- discuss important theories in the field of motivation, cognition and interaction and explain their significance for economic tasks and contexts.
- explain fundamental psychological conditioning factors and explanatory models of macroeconomic processes and phenomena and apply them to central economic issues.
- present the importance of work and essential influencing factors from a psychological perspective and derive operational possibilities for shaping work.
- differentiate essential psychological models and concepts for describing and influencing human behavior in organizations and groups.
- assess the possibilities and limits of the targeted development of organizations on the basis of central psychological theories and models and to develop behavioral recommendations.
- discuss basic psychological concepts of the learning organization and design measures for everyday working life.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the fields of Psychology	All Bachelor Programs in the Social Sciences fields

Business Psychology

Course Code: DLBMPS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Decisions in complex situations do not follow the rules of logic, but are determined by the features of market participants' behavior. In order to better understand this behavior and to make reliable forecasts based on it, economics is recommended to include discoveries in the field of psychology.After an introduction to business psychology and its influencing factors, students are familiarized with the various theories on motivation, cognition and interaction. This course then looks into business psychology at the macro- and microeconomic level. Students learn about the psychological view on the development of countries and societies as well as the psychology of organizations and groups. In addition, the psychology of work in relation to human resources in general and job satisfaction in particular is examined.Students learn about and understand the importance of change in organizations and the principle of the learning organization. The ability to learn faster than the competition is one of the most important competitive factors. Learning organizations promote joint and individual learning and increase employee motivation towards work.

Course Outcomes

On successful completion, students will be able to

- describe central economic assumptions and their influencing factors and critically question them in relation to concrete action and decision making.
- discuss important theories in the field of motivation, cognition and interaction and explain their significance for economic tasks and contexts.
- explain fundamental psychological conditioning factors and explanatory models of macroeconomic processes and phenomena and apply them to central economic issues.
- present the importance of work and essential influencing factors from a psychological perspective and derive operational possibilities for shaping work.
- differentiate essential psychological models and concepts for describing and influencing human behavior in organizations and groups.
- assess the possibilities and limits of the targeted development of organizations on the basis of central psychological theories and models and to develop behavioral recommendations.
- discuss basic psychological concepts of the learning organization and design measures for everyday working life.

Contents

1. Business Psychology

8. The Future of Work
   - 8.1 A Changing Workplace
   - 8.2 Artificial Intelligence (AI)
   - 8.3 Virtual Reality (VR)

Literature

Compulsory Reading

Further Reading

- Cascio, W. F. & Aguinis, H. (2019): Applied Psychology in Talent Management 8th Edition. SAGE Publication, London PQ.
- Church, A. H., Bracken, D. W., Fleenor, J. W. & Rose, D. S. (2019): Handbook of Strategic 360. Feedback. Oxford University Press, New York.
- Highhouse, S., Doverspike, D. & Guion, R. M. (2016): Essentials of Personnel Assessment and Selection (Essentials of Industrial and Organizational Psychology) (2nd Edition). Routledge, New York.
- Paschen, M & Dihsmaier, E. (2014): The Psychology of Human Leadership: How To Develop Charisma and Authority. Springer, Heidelberg.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Consumer Behavior

Module Code: DLBMKV_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Diana Murtagh-Böhm (Consumer Behavior)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Consumer Behavior (DLBMPS02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Behavioral-Scientific Basics of Consumer Behavior Factors
- Influencing Consumer Behavior
- Consumer Behavior in Service Markets
- Organizational Buying Behavior

Learning Outcomes

Consumer Behavior

On successful completion, students will be able to

- explain central terms of consumer psychology as well as being able to distinguish the basic psychological models for explaining consumer behavior and to assess them regarding their significance and applicability.
- present psychological theories and models of factors that trigger behavior and to derive recommendations for target-oriented marketing and advertising measures.
- discuss behavioral models of purchase decisions and purchase processes to develop recommendations for action for companies on this basis.
- explain the essential behavioral-scientific aspects and instruments of customer loyalty and work out approaches to solutions for concrete operational tasks in this field.
- describe the special requirements for the sale of services and plan measures to counter them in a promising way.
- explain organizational buying behavior and its determinants in a model-like way and to make suggestions in order to shape the actions in the individual process phases in a target-oriented way.
- transfer models and theories to the digital multi-channel client.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Marketing & Sales	All Bachelor Programs in the Marketing & Communication field

Consumer Behavior

Course Code: DLBMPS02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Companies need to know their customers and their consumption behavior in order to recognize trends early on and take advantage of opportunities to meet demand. Therefore, it is essential to analyze how customers allocate their resources (time, money, effort) and which factors contribute to the purchasing decision. For this purpose, questions such as What, why, when, how, how often and where does the customer buy? need to be answered. How do the characteristics of products and services influence the purchasing decision process? And what other aspects and factors are important? This course introduces students to essential psychological explanations and models of consumer behavior. It examines the purchasing decision processes of households and procuring organizations, explores the individual, social and digital factors that influence each of these processes, and highlights key concepts in customer loyalty. In addition, this course conveys the special features of marketing services and presents approaches on how companies can effectively meet these specific requirements.

Course Outcomes

On successful completion, students will be able to

- explain central terms of consumer psychology as well as being able to distinguish the basic psychological models for explaining consumer behavior and to assess them regarding their significance and applicability.
- present psychological theories and models of factors that trigger behavior and to derive recommendations for target-oriented marketing and advertising measures.
- discuss behavioral models of purchase decisions and purchase processes to develop recommendations for action for companies on this basis.
- explain the essential behavioral-scientific aspects and instruments of customer loyalty and work out approaches to solutions for concrete operational tasks in this field.
- describe the special requirements for the sale of services and plan measures to counter them in a promising way.
- explain organizational buying behavior and its determinants in a model-like way and to make suggestions in order to shape the actions in the individual process phases in a target-oriented way.
- transfer models and theories to the digital multi-channel client.

Contents

1. Introduction to Consumer Behavior

- 1.1 Concepts and Development of Consumer Behavior
- 1.2 Goals of Consumer Research
- 1.3 Consumption and Consumers

2. Understanding Consumer Behavior
   - 2.1 Defining Consumer Behavior
   - 2.2 Model Approaches of Models of Consumer Behavior
   - 2.3 Characteristics of Affecting of Consumer Behavior

3. Psychological Factor: Perception
   - 3.1 Perception
   - 3.2 Perceptual Process
   - 3.3 Importance of Perception in Marketing

4. Psychological Factors: Affect, Motivation and Attitude
   - 4.1 Affect
   - 4.2 Motivation
   - 4.3 Beliefs and Attitudes

5. Psychological Factors: Cognitive Processes
   - 5.1 Cognition and Memory
   - 5.2 Learning through Conditioning and Cognitive Learning Theories

6. Other Factors Influencing Consumer Behavior
   - 6.1 Personal Influencing Factors
   - 6.2 Social Factors
   - 6.3 Cultural Factors
   - 6.4 Digital Impact Factors

7. Buying, Using, Disposing
   - 7.1 Types of Buying Behavior and the Buying Process
   - 7.2 Pre-Purchase Phase
   - 7.3 Purchase Phase
   - 7.4 Post-Purchase and Use Phase

8. The Customer is King: From Customer Orientation to Customer Value
   - 8.1 Customer Orientation and Customer Satisfaction
   - 8.2 Customer Loyalty and Customer Value
   - 8.3 Price Sensitivity

8.4 The Multi-Channel Client

9. The Digital Consumer
   - 9.1 The Digital Decision-Making Process
   - 9.2 Influencers and Consumer Behavior
   - 9.3 Opportunities and Challenges for Digital Consumers

10. Organizational Buying Behavior
   - 10.1 Basics of Organizational Buying Behavior
   - 10.2 A Model of Organizational Purchase Decision

Literature

Compulsory Reading

Further Reading

- Solomon, M. R. (2017). Consumer behavior: Buying, having and being. Pearson.
- Solomon, M. R., Bamossy, G., Askegaard, S., & Hogg, M. K. (2006). Consumer Behavior: A European perspective (3rd ed.). Prentice Hall.
- Wu, T. (2017). The attention merchants: The epic struggle to get inside our heads. Vintage Books.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

Online Marketing

Module Code: DLBMSM1-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Josephine Zhou-Brock (Online Marketing)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Online Marketing (DLBMSM01-01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Written Assessment: Written Assignment Study Format: Duales myStudium Written Assessment: Written Assignment Study Format: myStudies Written Assessment: Written Assignment	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Online Marketing Basics
- Online Marketing Forms and Channels
- Online Marketing Strategy
- Online Media Planning
- The Online Presence
- Mobile Marketing and Mobile Commerce
- Online law
- Online Customer Loyalty and Service
- Web Analytics

Learning Outcomes

Online Marketing

On successful completion, students will be able to

- classify and strategically consider the basics relevant for Online Marketing (online communication process, electronic value creation, ...)
- know the different Online Marketing channels and to evaluate digital advertising measures strategically and operationally on this basis.
- conceive an Online Marketing strategy and make strategic and operational decisions.
- attract and retain customers through Online Marketing measures.
- measure and evaluate Online Marketing programs.
- fundamentally assess the marketing chances of a company in the World Wide Web.
- consider the importance of mobile in the Online Marketing Mix.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Online & Social Media Marketing	All Bachelor Programs in the Marketing & Communication field

Online Marketing

Course Code: DLBMSM01-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course uses interdisciplinary fundamentals that enable students to deal with the topic of Online Marketing in an operative and strategic way. This includes business and economic principles as well as communicative multimedia basics or the consideration of the basic tonality of Online Marketing channels. This holistic view is essential for strategic planning: In addition to considering the positioning of companies in the World Wide Web, the course will also work out how Online Marketing appearances can be optimized. The measurement of success and evaluation of relevant key figures complete the comprehensive basis for the whole module.
The Online Marketing course teaches basic technical terms and concepts. These include the online communication process, added value of Online Marketing as well as electronic value creation and business models. Based on this knowledge, the course discusses aspects of product suitability, pricing policy, distribution policy, the various forms of marketing and distribution on the Internet. The course expands the understanding of the strategic and especially operational Online Marketing elements such as the planning and realization of advertising campaigns through various sales channels. In addition, the increasing development of mobile communication is taken into account and Mobile Marketing is considered as part of the Online Marketing Mix.
To understand the behavior of online customers the course deals with the specific effects of advertising in regards to Online Marketing. Based on the principles of customer acquisition, the course discusses customer retention and loyalty in Online Marketing, strategies and tactics for increasing customer numbers, online campaigns and the importance of online relationships.
Students learn the ropes of legal aspects and the principles of the General Data Protection Regulation (GDRP) relevant to Online Marketing to legally substantiate advertising campaigns and customer approaches. This course offers students the opportunity to get to know and implement the various aspects of Online Marketing Management in practice. They learn how to assess Online Media Planning through Web Analytics and targeted monitoring. For this, students learn the relevant Key Performance Indicators (KPIs) of Online Marketing, which are an essential condition for optimizing online strategies.

Course Outcomes

On successful completion, students will be able to

- classify and strategically consider the basics relevant for Online Marketing (online communication process, electronic value creation, ...)
- know the different Online Marketing channels and to evaluate digital advertising measures strategically and operationally on this basis.
- conceive an Online Marketing strategy and make strategic and operational decisions.
- attract and retain customers through Online Marketing measures.
- measure and evaluate Online Marketing programs.
- fundamentally assess the marketing chances of a company in the World Wide Web.
- consider the importance of mobile in the Online Marketing Mix.

Contents

1. Online Marketing Basics
    - 1.1 Development and Concept of Online Marketing
    - 1.2 The Online Communication Process
    - 1.3 Electronic Added Value
    - 1.4 The Role of Online Marketing in the Marketing Mix
    - 1.5 Electronic Business Concepts and Platforms
    - 1.6 Current Developments and Trends
2. Online Marketing Forms and Channels
    - 2.1 Overview of Online Marketing Forms
    - 2.2 Affiliate and Search Engine Marketing
    - 2.3 Display Advertising and Email Marketing
    - 2.4 Social Media and Influencer Marketing
    - 2.5 Content Marketing and Storytelling
    - 2.6 Viral Marketing and Word-of-Mouth Marketing
    - 2.7 Native Advertising and Mobile Marketing
    - 2.8 Real Time Bidding and Programmatic Advertising
    - 2.9 Online PR
3. Online Marketing Strategy
    - 3.1 Set Goals and Creating a Base
    - 3.2 The Customer Journey
    - 3.3 The Right Channel Mix
    - 3.4 Defining and Analyzing KPIs
4. Online Media Planning

Literature
Compulsory Reading
Further Reading ▪ Chaffey, D., & Ellis-Chadwick, F. (2022). Digital marketing (8th ed.). Pearson. ▪ Kingsnorth, S. (2022). The Digital Marketing Handbook. KoganPage. ▪ Martínez-López, F. J., & López López, D. (Eds.). (2021). Advances in Digital Marketing and eCommerce. Springer Nature.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Study Format Duales myStudium

Study Format	**Course Type**
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Social Media Marketing

Module Code: DLBMSM2-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Josephine Zhou-Brock (Social Media Marketing)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Social Media Marketing (DLBMSM02-01_E)

Module Exam Type	
Module Exam Study Format: myStudies Advanced Workbook Study Format: Distance Learning Advanced Workbook	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Basics of Social-Media-Marketing
- Social Media Marketing Within the Overall Marketing Mix
- Social Media Landscape
- Developing a Social Media Strategy
- The Role of Social Media in Innovation Management
- Operational Social Media Marketing
- Legal Terms and Conditions of Social Media
- Developments in Social Media Marketing

Learning Outcomes

Social Media Marketing

On successful completion, students will be able to

- understand social implications and networking communication strategies and to apply them to the field of Social Media Marketing.
- integrate Social Media Marketing into the overall Marketing Mix.
- develop a Social Media strategy and proposals for its operational implementation.
- evaluate the different Social Media channels (Facebook, Instagram...)
- use Social Media for Innovation Management and networks.
- fundamentally assess the marketing opportunities of a company in the Social Media sector and make strategic decisions in this regard.
- evaluate developments in Social Media Marketing from a sociological as well as a business perspective.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Online & Social Media Marketing	All Bachelor Programs in the Marketing & Communication field

Social Media Marketing

Course Code: DLBMSM02-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

How did Social Media become Social Media Marketing? Social Media has developed from a private communication medium to a commercialized advertising tool. A basic understanding of this development, the social implications of Social Media as well as the networked communication strategies on the Internet is the basis for an active examination of Social Media Marketing. Social Media Marketing is considered both strategically and operationally. The strategic perspective includes the aspect of strategic positioning of Social Media in the company as well as the integration into the overall marketing mix. In addition to fundamental aspects of strategy development, students will deal with the instruments of today's Social Media Marketing and the channels to use them specifically for further marketing measures and strategies in a success-oriented manner. For the active operative examination of Social Media Marketing, Social Media channels such as Facebook, Instagram, Pinterest, etc. are examined in detail in order to use them specifically for further marketing measures and strategies. Digital advertising measures that are used in Social Media are an integral part of this course. Their usage will also be considered from a legal perspective. Thus, the Social Media Marketing course teaches basic concepts such as the development of a Social Media strategy, including aspects such as content management, editorial planning or target group analysis. It deals with the usage and monitoring of different Social Media channels in a practice-oriented way and it considers the area of operative Social Media Marketing. Hence, this course provides students with a well-founded holistic view of the field of Social Media Marketing and develops the ability to use Social Media for innovation management.

Course Outcomes

On successful completion, students will be able to

- understand social implications and networking communication strategies and to apply them to the field of Social Media Marketing.
- integrate Social Media Marketing into the overall Marketing Mix.
- develop a Social Media strategy and proposals for its operational implementation.
- evaluate the different Social Media channels (Facebook, Instagram...)
- use Social Media for Innovation Management and networks.
- fundamentally assess the marketing opportunities of a company in the Social Media sector and make strategic decisions in this regard.
- evaluate developments in Social Media Marketing from a sociological as well as a business perspective.

Contents

6.5 Community Management und Social Media Monitoring
6.6 Social Media Relations
6.7 Social Media Recruiting
6.8 Social Advertising

7. Legal Terms and Conditions of Social Media
7.1 Legal Terms and Conditions of using Social Media
7.2 General Data Protection Regulation (GDPR)
7.3 User-generated Content
7.4 Facebook Pixel

8. Developments in Social Media Marketing
8.1 Social Media in a Time of Digital Transformation: A new kind of Consumption
8.2 Social Products and Brands
8.3 Social Commerce and Social Selling
8.4 Instant Messengers and Bots
8.5 The Terms "Post-Factual" and "Post-Digital"
8.6 Open Leadership and Dealing with Loss of Control

Literature

Compulsory Reading

Further Reading

- Aral, S. (2020). The hype machine. How social media disrupts our elections, our economy, and our health – and how we must adapt. Random House.
- Barker, M. S., Barker, D. I., Borman, N. F., Roberts, M. L. & Zahay, D. (2017). Social media marketing. A strategic approach (2nd ed.). CENGAGE Learning.
- Butow, E., Allton, M., Herman, J., Liu, S., & Robinson, A. (2020). Ultimate guide to social media marketing. Entrepreneur Press, Fitch.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Advanced Workbook

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Advanced Workbook

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions		

Project: Dynamics 365 Business Central - Financial Company Setup

Module Code: DLBMSERP1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Dr. Aditya Mushyam (Project: Dynamics 365 Business Central - Financial Company Setup)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: Dynamics 365 Business Central - Financial Company Setup (DLBMSERP01)

Module Exam Type	
Module Exam Study Format: Duales myStudium Written Assessment: Project Report Study Format: Distance Learning Written Assessment: Project Report Study Format: myStudies Written Assessment: Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

This module empowers students to configure and perform core business processes of a small or medium-sized company in an enterprise resource planning (ERP) system using Microsoft Dynamics 365 Business Central. Therefore, the module will address the core financial setup as well as sales and distribution processes for a small or medium-sized company.

Learning Outcomes

Project: Dynamics 365 Business Central - Financial Company Setup

On successful completion, students will be able to

- describe the core feature of Business Central as an ERP system for small or medium-sized company.
- initially setup Business Central (SaaS).
- configure a new small or medium-sized demo company in Business Central.
- manage core security settings in Business Central.
- configure financials by setting up the finance module in Business Central.
- configure the chart of accounts in Business Central.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Dynamics 365 Business Central - Financial Company Setup

Course Code: DLBMSERP01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course aims to empower students to perform financial business processes of a small or medium-sized company using the well-established cloud-based ERP system Microsoft Dynamics 365 Business Central (BC). At first, you will gain important insights into the typical structure of BC. Based on that knowledge, you will be guided to setup a SaaS environment for a demo company in BC. To ensure a safe operation of BC in the cloud you will learn how to configure essential security settings. Next, you will familiarize yourself with the most important and common financial business processes for a small or medium-sized business. Finally, you will configure the accounting module for your demo company in BC.

Course Outcomes

On successful completion, students will be able to

- describe the core feature of Business Central as an ERP system for small or medium-sized company.
- initially setup Business Central (SaaS).
- configure a new small or medium-sized demo company in Business Central.
- manage core security settings in Business Central.
- configure financials by setting up the finance module in Business Central.
- configure the chart of accounts in Business Central.

Contents

- Embarking on the journey of utilizing BC involves a series of pivotal steps. It commences with the fundamental task of setting up the platform itself. This encompasses the creation and meticulous configuration of a company, including the setup of security settings to ensure a secure operational environment. The process further extends to establishing the core functionality, which serves as the backbone of operations. The inclusion of dimensions adds an additional layer of precision to data handling. A critical aspect of the BC framework lies in managing approvals seamlessly through the implementation of workflows, streamlining processes and enhancing efficiency. Within the finance module, a thorough configuration is undertaken. This involves the setup of financial management procedures, which ensures the financial aspect of operations is well-structured and organized. Part of this process includes the establishment of the chart of accounts, providing a foundation for accurate

financial tracking. Moreover, the setup of posting groups refines the financial recording process, facilitating precise categorization. The establishment of journals and bank accounts enhances financial transparency, offering a clear overview of monetary transactions. Notably, payable accounts are configured, ensuring seamless management of outgoing payments. Similarly, the setup of receivable accounts streamlines the handling of incoming payments. Collectively, these steps form a comprehensive roadmap to unleash the full potential of BC, enabling efficient operations and meticulous financial management.

Literature

Compulsory Reading

Further Reading

- Gayer, M., Hauptmann, C., & Ebert, J. (2020). Microsoft Dynamics 365 Business Central: Das Anwenderbuch zur Abwicklung von Geschäftsprozessen (11. Ausgabe). Carl Hanser Verlag.
- Ferner, C. (2020): Microsoft Dynamics 365 Business Central Basiswissen (Auflage 1). BoD – Books on Demand.
- Merk, J. (2020). Microsoft Dynamics 365 BC Finanzbuchhaltung. NEW ERA Publications
- Microsoft Corporation. (2023). Learning path for certification: Dynamics 365 Business Central Functional Consultant.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Project: SAP S/4HANA - Financial Company Setup incl. Human Capital Management

Module Code: DLBSAPBPI1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Knut Linke (Project: SAP S/4HANA - Financial Company Setup incl. Human Capital Management)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: SAP S/4HANA - Financial Company Setup incl. Human Capital Management (DLBSAPBPI01)

Module Exam Type	
Module Exam Study Format: Duales myStudium Written Assessment: Project Report Study Format: Distance Learning Written Assessment: Project Report Study Format: myStudies Written Assessment: Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

This module empowers students to configure and perform core business processes of medium-sized and large companies in an enterprise resource planning (ERP) system using SAP S/4HANA and the user interface SAP Fiori. The module consists of two steps, each catering to specific facets. In the first step, attention is directed towards the core financial setup as well as the preliminary configuration of the Human Capital Management module using a demo company as an illustration. This step lays down a robust foundation in these domains. Moving on to the second step, the focus shifts to expanding the initial setup by integrating business processes related to sales, distribution, and production.

Learning Outcomes

Project: SAP S/4HANA - Financial Company Setup incl. Human Capital Management

On successful completion, students will be able to

- navigate confidently within the SAP S/4HANA ERP system.
- explain the organizational structures.
- understand the concept of master data.
- explain financial accounting (FI) module.
- explain management accounting (CO) module.
- explain the employee master data record (HCM).

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: SAP S/4HANA - Financial Company Setup incl. Human Capital Management

Course Code: DLBSAPBPI01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course aims to empower students to perform financial business processes of medium-sized and large companies using the well-established ERP system SAP S/4HANA (S4H). At first, you will gain important insights into the typical organizational structure and navigation within S4H. You will understand the new user experience concept of SAP Fiori. Based on that knowledge, you will get in contact with the concept of master data in S4H. Next, you will familiarize yourself with the most important and common financial business processes in the financial accounting (FI) and management accounting (CO) module of S4H. Finally, you will configure the employee master data record in the Human Capital Management (HCM) module of S4H.

Course Outcomes

On successful completion, students will be able to

- navigate confidently within the SAP S/4HANA ERP system.
- explain the organizational structures.
- understand the concept of master data.
- explain financial accounting (FI) module.
- explain management accounting (CO) module.
- explain the employee master data record (HCM).

Contents

- The course provides a comprehensive introduction into SAP S/4HANA starting with the overall SAP S/4HANA Enterprise Management: Overview. Therefore, the course offers a comprehensive and presentation of various key concepts and functions relevant in the world of SAP S/4HANA. Furthermore, it focuses on the new user experience brought by SAP Fiori UX. The course covers the basics of SAP S/4HANA as well as the various organizational structures that exist within this system. A central concept addressed is that of master data. The subjects of Financial Accounting and Management Accounting (Record-to-Report processing) are thoroughly examined, providing an overview. Within these areas, Financial Accounting (FI) is explained, and Management Accounting (CO) is illuminated further. The integration between FI and CO is also outlined. The fundamentals of Financial Accounting and Management Accounting (Record-to-Report processing) are further delved into. This includes the definitions of General Ledger (G/L) accounts and cost elements, as well as

the definition of cost centers. Step-by-step instructions for posting G/L account documents and handling business partners and invoices are conveyed. The management of Asset Accounting, Activity Types, and Internal Orders is also comprehensively explained. The course also addresses the realm of Human Capital Management (HCM). This covers organizational management in HCM, as well as the significance of HCM master data. Another important aspect is the integration with SAP Success Factors.

Literature

Compulsory Reading

Further Reading

- Fitzner, W., Fitzner, D. (2021). SAP S/4HANA: Der Grundkurs für Einsteiger und Anwender. SAP Press
- Fix, W., Plota, R. (2021). SAP – Der technische Einstieg: Der Standardtitel für Ausbildung, Studium und Quereinstieg. SAP Press
- SAP SE. (2023). SAP Learning journey "Explore Integrated Business Processes in SAP S/4HANA".
- SAP SE. (2023). SAP Learning journey "Discovering End-to-End Business Processes for the Intelligent Enterprise".

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Sustainability and Quality Management

Module Code: DLBLONQM1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Vera Schenkenberger (Sustainability and Quality Management)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Sustainability and Quality Management (DLBLONQM01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Fundamentals of Sustainability
- Sustainability in three Dimensions
- Sustainability in Practice
- 4 Tools and Methods of Sustainability Management
- Quality of Products, Processes and Services
- Processes, Methods and Quality Tools
- Quality Management Systems

Learning Outcomes

Sustainability and Quality Management

On successful completion, students will be able to

- know the principles of sustainability and quality management and their significance for the company and society.
- know procedures and instruments and to implement sustainability and quality concepts in practice.
- scientifically classify the entire subject area, on the basis of the contents of the courses and with the help of supplementary scientific literature, and place it in relation to each other and evaluate it with regard to its significance for practice.
- reflect on the subject of sustainability and quality management against the background of corporate responsibility.
- know methods and applications for the realization of sustainability concepts under consideration of economic, ecological and social aspects and to apply them professionally in practice and to use them for the development of problem solutions based on sustainability criteria.
- apply quality management procedures and instruments in practice.
- present the developed solution approaches in an argumentatively well-founded and comprehensible way. Students are able to assess the role of sustainably operating companies and institutions, especially from a system perspective.
- know the legal and normative framework for sustainability and quality management.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Quality & Sustainability Management	All Bachelor Programs in the Management field

Sustainability and Quality Management

Course Code: DLBLONQM01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The students learn the basics and the operational concepts of sustainability and quality management and can contribute to the implementation in practice. The importance of sustainability and quality as a corporate task is discussed from the perspective of personal, corporate and social responsibility, among other things. Methods and systems of implementation in companies are presented and critically examined.

Course Outcomes

On successful completion, students will be able to

- know the principles of sustainability and quality management and their significance for the company and society.
- know procedures and instruments and to implement sustainability and quality concepts in practice.
- scientifically classify the entire subject area, on the basis of the contents of the courses and with the help of supplementary scientific literature, and place it in relation to each other and evaluate it with regard to its significance for practice.
- reflect on the subject of sustainability and quality management against the background of corporate responsibility.
- know methods and applications for the realization of sustainability concepts under consideration of economic, ecological and social aspects and to apply them professionally in practice and to use them for the development of problem solutions based on sustainability criteria.
- apply quality management procedures and instruments in practice.
- present the developed solution approaches in an argumentatively well-founded and comprehensible way. Students are able to assess the role of sustainably operating companies and institutions, especially from a system perspective.
- know the legal and normative framework for sustainability and quality management.

Contents

1. Fundamentals of Sustainability
    - 1.1 Basic understanding and definitions
    - 1.2 Ethical aspects and social responsibility of companies
    - 1.3 Learning from nature: Role models for business processes

2. Sustainability in three Dimensions
   - 2.1 Historical developments
   - 2.2 Developments in the natural environment
   - 2.3 Economic trends
   - 2.4 Social developments and social environment

3. Sustainability in Practice
   - 3.1 Politics and State
   - 3.2 Companies
   - 3.3 Civil Society

4. Tools and Methods of Sustainability Management
   - 4.1 System Dynamics and Technology Assessment
   - 4.2 Environmental Law
   - 4.3 Sustainability and environmental management systems
   - 4.4 Life cycle assessment and CO2 footprint

5. Quality of Products, Processes and Services
   - 5.1 Definitions and terms
   - 5.2 Developments and trends
   - 5.3 Specifics of service quality
   - 5.4 Metrics and key figure systems

6. Processes, Methods and Quality Tools
   - 6.1 Continuous improvement
   - 6.2 Failure Mode and Effects Analysis (FMEA)
   - 6.3 7Q - the seven quality tools
   - 6.4 Audits and certifications

7. Quality Management Systems
   - 7.1 Quality management according to DIN EN ISO 9000ff.
   - 7.2 Total Quality Management

Literature
Compulsory Reading
Further Reading ▪ Crane, A./Matten, D. (2019): Business ethics. Managing corporate citizenship and sustainability in the age of globalization. 5th Edition, Oxford University Press, Oxford. ▪ Diran, D.R. (2016): Total Quality Management: Key Concepts and Case Studies. Butterworth-Heinemann, Amsterdam et al. ▪ Goetsch, D.L./Davis, S. (2016): Qualitiy Management for Organizational Excellence. Introduction to Total Quality. 8th Edition, Pearson, New Jersey. ▪ Meadows, D./Meadows, D./RANDERS, J. (2004): Limits to Growth: the 30-Year Update. White River Junction, VT Chelsea Green. ▪ Nassos, G. P./Avlonas, N. (2020): Practical Sustainability Strategies - How to Gain a Competitive Advantage. 2nd Edition. John Wiley & Sons, Hoboken.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

International Business Law

Module Code: DLBHMEIBL

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Roman Jordans (International Business Law)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- International Business Law (DLBHMEIBL01)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam or Advanced Workbook, 90 Minutes Study Format: myStudies Exam or Advanced Workbook, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Different Legal Systems, Comparative Law and Supranational Law
- The Civil Law
- The Common Law
- Other Legal Systems
- Private International Law
- European Union Law

Learning Outcomes

International Business Law

On successful completion, students will be able to

- identify and distinguish between the main legal systems.
- develop an intercultural sensitivity for the different legal systems and the application of legal rules in the respective systems.
- apply the basic rules of private international law.
- understand the legal framework and interpret legal acts of the European Union.
- comprehend the impact of EU law on national legal systems.
- understand the areas of EU economic regulation and the implications of EU primary law on economic activities.
- understand the impact of the respective legal system(s) on entrepreneurial decisions.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Law	All Bachelor Programs in the Business field

International Business Law

Course Code: DLBHMEIBL01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

International business activities necessarily happen in an environment of different legal systems. Significant differences exist not only in legal norms and basic principles, but also with regard to applying and interpreting the law as well as the procedures for enforcing rights before courts and authorities. To make things even more complex for foreigners, such national characteristics are often based on historical and cultural peculiarities. The course addresses the essential basics of civil law, which dominates in the European legal system, and common law, which dominates in the Anglo-Saxon legal system, and highlights the respective differences, special features and characteristics. In addition, the course gives a short overview over other legal systems and presents the basics of private international law - the area of law that determines the legal rules of which state actually apply to cross-border activities.European Union law plays a special role for international business activities due to many reasons: First, the EU is becoming more and more important as an economic area. Second, European Union law is supranational in a sense that it interacts with or even derogates national law of the EU member states. Given, third, the abundance of EU legislation and administrative action, EU law today constitutes an essential framework for economic activities within the EU. The course therefore provides students with a basic understanding of the sources of EU law, its application and interpretation as well as its enforcement in national and EU courts. Further, the course shows the impact of EU law on national legal systems. Finally, the course gives an overview over the major areas of EU economic regulation as well as the implications of EU primary law on economic activities.

Course Outcomes

On successful completion, students will be able to

- identify and distinguish between the main legal systems.
- develop an intercultural sensitivity for the different legal systems and the application of legal rules in the respective systems.
- apply the basic rules of private international law.
- understand the legal framework and interpret legal acts of the European Union.
- comprehend the impact of EU law on national legal systems.
- understand the areas of EU economic regulation and the implications of EU primary law on economic activities.
- understand the impact of the respective legal system(s) on entrepreneurial decisions.

Contents

Literature
Compulsory Reading
Further Reading ▪ Brödermann, E. (2014). German and European Private International Law. Books on Demand. ▪ de Luca, N. (2021). European Company Law (2nd ed.). Cambridge University Press. ▪ Dimatteo, L. (2021). International Business Law and the Legal Environment: A Transactional Approach (4th ed.). Routledge. ▪ Vicari, A. (2021). European Company Law (1st ed.). De Gruyter. ▪ Vranken, M. (2015). Western Legal Traditions: A Comparison of Civil Law and Common Law (1st ed.). Federation Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Advanced Workbook, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions		☑ Online Tests
		☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Advanced Workbook, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Review Book
☑ Recorded Live Sessions		☑ Online Tests
		☑ Guideline

Management Accounting

Module Code: DLBMAE

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Zeljko Sevic (Management Accounting)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Management Accounting (DLBMAE01)

Module Exam Type	
Module Exam Study Format: myStudies Exam or Written Assessment: Written Assignment, 90 Minutes Study Format: Distance Learning Exam or Written Assessment: Written Assignment, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Management accounting and control function
- Differences between management accounting, and financial accounting
- Cost terms, cost categories, and cost behavior
- Cost allocation
- General and specific cost allocation methods
- Break-even analysis
- Planning and budgeting

Learning Outcomes

Management Accounting

On successful completion, students will be able to

- differentiate the management accounting and control function from the financial accounting and the financial management function.
- understand the cost structure and discuss the cost aspects of business operation.
- analyze and apply the tools for viewing and differentiating costs and utilize them to ameliorate business decision-making.
- discuss how the budgeting process and variance analysis works to implement the management control function.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Finance & Tax Accounting	All Bachelor Programs in the Business field

Management Accounting

Course Code: DLBMAE01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Management accounting is an important function to operate an organization. Managers need to understand this function in order to be able to run an organization efficiently. In most organizations, decisions, actions and human behavior are directly linked to the feature, use and focus of management accounting information. This course is about understanding the preparation and use of information provided by management accounting. Cost accounting as a central part of the management accounting informs the management about the profitability of its core business. The cost and performance measurement serves the internal decision, control and budgeting process.

Course Outcomes

On successful completion, students will be able to

- differentiate the management accounting and control function from the financial accounting and the financial management function.
- understand the cost structure and discuss the cost aspects of business operation.
- analyze and apply the tools for viewing and differentiating costs and utilize them to ameliorate business decision-making.
- discuss how the budgeting process and variance analysis works to implement the management control function.

Contents

1. Introduction to Management Accounting
   - 1.1 Financial vs. Management/Cost Accounting
   - 1.2 Definition of Cost
   - 1.3 Considering the Contemporary Business World Context
   - 1.4 Cost Behavior: Fixed and Variable Costs
2. Cost-Volume-Profit Analysis
   - 2.1 Break-Even Analysis
   - 2.2 Cost Structure and Operating Leverage
   - 2.3 Cost Structure and Variabilization
3. Simplistic Methods of Cost Allocation

Literature
Compulsory Reading
Further Reading ▪ Atkinson, A. A., Kaplan, R., Matsumura, E. M., & Young, S. M. (2012). Management accounting: Information for decision-making and strategy execution (6th ed.). Pearson. ▪ Drury, C. (2019). Management accounting for business (7th ed.). Cengage.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Written Assessment: Written Assignment, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Written Assessment: Written Assignment, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		☑ Guideline

Entrepreneurship and Innovation

Module Code: DLBBAEI-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Diana Murtgah-Böhm (Entrepreneurship and Innovation)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Entrepreneurship and Innovation (DLBBAEI01-01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Entrepreneurship
- The Entrepreneur
- The Entrepreneurial Process
- Innovation
- Planning, Business Models and Strategy

Learning Outcomes

Entrepreneurship and Innovation

On successful completion, students will be able to

- understand the core principles of entrepreneurship.
- define the main characteristics of entrepreneurs as well as their motivations and their behavior.
- describe the entrepreneurial process with its different stages.
- recognize problems and negative side effects of entrepreneurship.
- define innovation and explain the innovation lifecycle.
- understand a business plan and what defines a business model.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the fields of Business Administration & Management	All Bachelor Programmes in the Business field

Entrepreneurship and Innovation

Course Code: DLBBAEI01-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Entrepreneurship and innovation are the basis and one of the driving forces of every economy. Entrepreneurship and innovation are of great importance in every phase of the economic development cycle. They are important drivers for competition, competitiveness and survival in globalized markets. In this module, students are familiarized with the ideas, motives and concepts of entrepreneurship. They also get an overview of the identification, evaluation and further development of innovations.

Course Outcomes

On successful completion, students will be able to

- understand the core principles of entrepreneurship.
- define the main characteristics of entrepreneurs as well as their motivations and their behavior.
- describe the entrepreneurial process with its different stages.
- recognize problems and negative side effects of entrepreneurship.
- define innovation and explain the innovation lifecycle.
- understand a business plan and what defines a business model.

Contents

1. Entrepreneurship
   - 1.1 Defining Entrepreneurship
   - 1.2 Benefits of Entrepreneurial Activity
   - 1.3 Types of Entrepreneurs
   - 1.4 Global Trends in Entrepreneurship
2. The Entrepreneur
   - 2.1 Defining Entrepreneur
   - 2.2 Characteristics of Entrepreneurs
   - 2.3 Entrepreneurial Motivation and Behavior
3. The Entrepreneurial Process
   - 3.1 Stages of the Entrepreneurial Process

3.2 Venture Creation
3.3 Creativity Management and Time Pressure

4. Innovation
4.1 Defining Innovation
4.2 Innovation Lifecycle
4.3 Sources of Innovation
4.4 Encouraging Entrepreneurship and Innovation

5. Planning, Business Models and Strategy
5.1 Business Plan
5.2 Designing a Business Model
5.3 Developing a Business Strategy

Literature

Compulsory Reading

Further Reading

- Bessant, J., & Tidd, J. (2015). Innovation and entrepreneurship. Wiley.
- Parker, S. C. (2018). The economics of entrepreneurship (2nd ed.). Cambridge University Press.
- Scarborough, N., & Cornwall, J. (2018). Essentials of entrepreneurship and small business management (Global ed.). Pearson Education.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Leadership 4.0

Module Code: DLBWPLS_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Simon Fischer (Leadership 4.0)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Leadership 4.0 (DLBWPLS01_E)

Module Exam Type	
Module Exam Study Format: Duales myStudium Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Conventional understanding of leadership
- Management tools
- Leadership versus management
- Integral concept of humankind as future-oriented model
- Characteristics and competencies of leaders
- Leadership models
- Agile Leadership instruments

Learning Outcomes

Leadership 4.0

On successful completion, students will be able to

- understand the classical theories of leadership and new leadership models.
- distinguish between the terms leadership and management.
- reflect on the understanding of successful leadership models against the background of economic changes.
- develop an understanding of the need for alternative forms of organizational directing.
- implement appropriate leadership methods according to a company's level of complexity.
- draw upon a sound theoretical understanding that they can practice in applied research.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the fields of Business Administration & Management	All Bachelor Programmes in the Business field

Leadership 4.0

Course Code: DLBWPLS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Today, competitiveness depends more than ever on continuous innovation. This puts new demands on the management of companies. The task of successful leaders in innovation and business is no longer to offer direction and solutions, but to create a framework in which others develop innovations. This change, which is currently taking place with full force in companies, requires further developments on classic leadership concepts and its principles.Against the background of digital change and the advance of artificial intelligence, established business models are constantly being put to the test. On the one hand, it is important to work on several projects simultaneously and to adapt flexibly to changing conditions at any time; on the other hand, employees want to be integrated into the work process in a different way. Consideration and flexibility for their personal and family situation play an increasing role. Innovation and business leaders can only meet all these diverse challenges with Leadership by inspiring others to think ahead and act inter-divisionally, in other words, to be visionary. This course tries to convey knowledge, understanding and tools for this challenging field of work.

Course Outcomes

On successful completion, students will be able to

- understand the classical theories of leadership and new leadership models.
- distinguish between the terms leadership and management.
- reflect on the understanding of successful leadership models against the background of economic changes.
- develop an understanding of the need for alternative forms of organizational directing.
- implement appropriate leadership methods according to a company's level of complexity.
- draw upon a sound theoretical understanding that they can practice in applied research.

Contents

1. Basics of the Leadership Concept
    - 1.1 Definition of the Leadership Concept and Leadership Actions
    - 1.2 Development of the Understanding of Leadership
    - 1.3 The Role of Communication in Leadership
    - 1.4 New Challenges for Leadership
2. Leadership Versus Management

2.1 Distinctions between these Concepts
2.2 Relevance of Leadership in the Context of Technological Change
2.3 New Forms of Work as a Challenge for Leadership 4.0

3. Organizational Prerequisites for Successful Leadership
3.1 Launching Corporate Governance Initiatives
3.2 From Process to Project Management
3.3 Managing Limited Resources

4. Personal Factors for Successful Leadership
4.1 Personal Characteristics
4.2 Technological Know-how
4.3 Policy and Compliance

5. Management Tools
5.1 Definition, Differentiation and Challenges
5.2 Use of Direct Management Tools
5.3 Use of Indirect Management Tools

6. Leadership 4.0 Models
6.1 Transformational Leadership
6.2 Leadership as an Agile Role
6.3 Authentic Leadership

7. Leadership 4.0 Case Studies
7.1 Allsafe Jungfalk
7.2 Automattic

Literature

Compulsory Reading

Further Reading

- Seliger, R (2022): Positive Leadership. The Management revolution, Schäffer-Poeschel, Freiburg
- Luthans, F. (2021): Organizational Behavior: An Evidence-Based Approach, 14th Edition. Charlotte, NC : Information Age Publishing.
- Helmod, M. (2021): New Work, Transformational and Virtual Leadership: Lessons from Covid-19 and other crisis, Springer, Wiesbaden.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Project: Production and Logistics

Module Code: DLBLOPPL_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

N.N. (Project: Production and Logistics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Production and Logistics (DLBLOPPL01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

This module focuses on the teaching and application of methods and instruments that support management decisions in the context of production setup and production planning. Both strategic network planning and the operation of production logistics are addressed. Strategic planning includes topics such as selection of site location and strategic production planning, while operations planning includes lot-size planning and production scheduling.

Learning Outcomes

Project: Production and Logistics

On successful completion, students will be able to

- understand the different planning tasks involved in setting up and operate production and assign the planning tasks to different decision-making levels.
- know optimizing and heuristic procedures for selection of site location and apply them exemplarily.
- distinguish methods and tools for demand forecasting and demand planning and implement quantitative methods for demand forecasting and demand planning.
- determine methods for material requirements in production planning and implement those methods exemplary.
- know and apply optimizing and heuristic methods of lot-size planning and scheduling for production.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the fields of Transportation & Logistics	All Bachelor Programs in the Transport & Logistics fields

Project: Production and Logistics

Course Code: DLBLOPPL01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

There are many different questions to be answered and decisions to be made when designing and operating a production network. At the strategic level, these decisions include the structure of the production network, while at the operational level, the planning of the production logistics is addressed. Using a concrete planning example, the students learn relevant methods of decision support and can apply these methods to the use case. From the choice of site location and strategic production planning to scheduling in production, methods and instruments for all planning and decision-making levels are presented and applied as examples.

Course Outcomes

On successful completion, students will be able to

- understand the different planning tasks involved in setting up and operate production and assign the planning tasks to different decision-making levels.
- know optimizing and heuristic procedures for selection of site location and apply them exemplarily.
- distinguish methods and tools for demand forecasting and demand planning and implement quantitative methods for demand forecasting and demand planning.
- determine methods for material requirements in production planning and implement those methods exemplary.
- know and apply optimizing and heuristic methods of lot-size planning and scheduling for production.

Contents

- In this course, students learn in a business game how to the setup and operate a car plant. Applying suitable methods, instruments and procedures is necessary to successfully pass through the different phases of production planning and to make valid decisions. Starting with the selection of site location and site layout planning, students work successively on the creation of strategic production plans such as demand forecasts, production programs and material requirements plans. The strategic plans are then translated into tactical-operational planning objects such as production lots and production schedules. After successful completion of the business game, students deepened their knowledge in a project report on selected topics of production planning and production logistics.

Literature
Compulsory Reading
Further Reading ▪ Bozarth, C., & Handfield, R. (2019). Introduction to operations and supply chain management, Pearson. ▪ Chopra, S. (2019). Supply chain management: strategy, planning, and operation (7th edition), Pearson. ▪ Donald Bowersox, David Closs, & M. Bixby Cooper. (2020). Supply Chain Logistics Management: Vol. Fifth edition, McGraw-Hill Education. ▪ Heizer, J., Render, B., & Munson, C. (2020). Principles of operations management: Sustainability and supply chain management. Pearson. ▪ Slack, N., & Brandon-Jones, A. (2019). Operations Management (Ninth edition). Pearson.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint	☑ Slides	☑ Guideline

6. Semester

Supply Chain Management II

Module Code: DLBDSESCM2

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Supply Chain Management II)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Supply Chain Management II (DLBDSESCM02)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam or Advanced Workbook, 90 Minutes Study Format: Distance Learning Exam or Advanced Workbook, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Strategic aspects of SCM
- SCM Practice: Tasks and Activities in the Core Planning Process
- SCM Practice: Tasks and Activities in the Core Process of Procurement
- SCM Practice: Tasks and Activities in the Core Process Production
- SCM Practice: Tasks and Activities in the Core Distribution Process

Learning Outcomes

Supply Chain Management II

On successful completion, students will be able to

- systematically explain the strategic relevance of enterprise-wide value creation processes.
- understand the most important tasks and problems in the SCM core process planning.
- systematize the elements and interrelationships in the CPFR model in a differentiated way.
- be familiar with the characteristics and peculiarities of contract logistics.
- understand the most important tasks and problems in the SCM core process procurement.
- explain central elements and characteristics of a procurement strategy.
- understand the most important tasks and problems in the SCM core process production.
- explain central elements and characteristics of a modern production strategy.
- understand the most important tasks and problems in the SCM core process distribution.
- explain central elements and characteristics of the so-called ECR concept.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Transportation & Logistics	All Bachelor Programs in the Transport & Logistics field

Supply Chain Management II

Course Code: DLBDSESCM02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

From the perspective of strategic management research and practice, the activities covered by the term SCM are closely related to efforts to build and/or maintain a stable operational competitive advantage. A fundamental discussion of this relationship forms the starting point for the course. On this basis, a differentiated analysis of strategy-relevant activities and instruments in the Plan, Source, Make, Deliver, and Return process categories is then carried out using the SCOR model. Special attention is given to the practice-relevant areas of SCM, e.g., order-promising (plan), supplier-relation-management (source), postponement (make), and the ECR-concept (deliver).

Course Outcomes

On successful completion, students will be able to

- systematically explain the strategic relevance of enterprise-wide value creation processes.
- understand the most important tasks and problems in the SCM core process planning.
- systematize the elements and interrelationships in the CPFR model in a differentiated way.
- be familiar with the characteristics and peculiarities of contract logistics.
- understand the most important tasks and problems in the SCM core process procurement.
- explain central elements and characteristics of a procurement strategy.
- understand the most important tasks and problems in the SCM core process production.
- explain central elements and characteristics of a modern production strategy.
- understand the most important tasks and problems in the SCM core process distribution.
- explain central elements and characteristics of the so-called ECR concept.

Contents

1. Strategic Aspects of SCM
   - 1.1 Strategic Thinking and Action: General Information
   - 1.2 Competition Focus and SCM
   - 1.3 Competition Location and SCM
   - 1.4 Competition Rules and SCM

2. SCM Practice: Core Process Planning
   - 2.1 General Preliminary Considerations
   - 2.2 Collaborative Planning, Forecasting, and Replenishment
   - 2.3 Order Promoting

2.4 Kanban
2.5 Integration of X-PL Logistics Service Providers

3. SCM Practice: Core Process Procurement
   3.1 General Preliminary Considerations
   3.2 Production Synchronous Procurement
   3.3 Sourcing Concepts
   3.4 Supplier Relations Management

4. SCM Practice: Core Process Production
   4.1 Selected Aspects of the Problem Background
   4.2 Collaborative Engineering
   4.3 Postponement Strategies
   4.4 Value Added Partnership

5. SCM Practice: Core Process Distribution
   5.1 Basic Information on the Distribution Problem
   5.2 Efficient Consumer Response (ECR)
   5.3 Consignment Warehouse

Literature

Compulsory Reading

Further Reading

- Chopra, S. (2019). Supply chain management: Strategy, planning and operation (Global ed., 7th ed.). Pearson.
- Hill, A., & Hill, T. (2018). Essential operations management (2nd ed.). Palgrave.
- Hugos, M. (2011). Essentials of supply chain management (3rd ed.). John Wiley & Sons.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Advanced Workbook, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam or Advanced Workbook, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
100 h	0 h	25 h	25 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Digital Future Commerce

Module Code: DLBDBDFC_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Konstantinos Kalligiannis (Digital Future Commerce)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Digital Future Commerce (DLBLOGC201_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Systems and processes in business and logistics
- Trends and developments
- Digital value networks
- Handling large amounts of data
- Global trade in a digital world

Learning Outcomes

Digital Future Commerce

On successful completion, students will be able to

- explain the possibilities for mapping business processes in IT systems and assess the possible uses of workflow management systems.
- explain current trends in digitization, outline historical developments starting with the industrial revolution, and explain the innovation potential of digitization.
- describe digital value networks and their special features using examples.
- describe the implications of E-Commerce for logistics and analyze the impact of digitalization on business processes.
- explain the challenges of Big Data and develop concepts as well as solution strategies for individual fields of application, especially from the area of eCommerce.
- describe global commerce in the digitalized world against the backdrop of rapid changes and adaptation processes and to classify the "human factor" in this context.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of E-Commerce	All Bachelor Programs in the Marketing & Communication field

Digital Future Commerce

Course Code: DLBLOGC201_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Participation in the course is designed to familiarize students with the future topics of digitization in logistics, industry and commerce. They will gain an overview of the status of technical developments and current implementation. Based on this, they will develop concepts and implementation strategies for selected operational contexts.

Course Outcomes

On successful completion, students will be able to

- explain the possibilities for mapping business processes in IT systems and assess the possible uses of workflow management systems.
- explain current trends in digitization, outline historical developments starting with the industrial revolution, and explain the innovation potential of digitization.
- describe digital value networks and their special features using examples.
- describe the implications of E-Commerce for logistics and analyze the impact of digitalization on business processes.
- explain the challenges of Big Data and develop concepts as well as solution strategies for individual fields of application, especially from the area of eCommerce.
- describe global commerce in the digitalized world against the backdrop of rapid changes and adaptation processes and to classify the "human factor" in this context.

Contents

1. Systems and Processes in Business and Logistics
   - 1.1 Logistical Systems Thinking and Economic Modeling
   - 1.2 Logistical Processes and Process Thinking in Retail
   - 1.3 Mapping of Business Processes in IT Systems
   - 1.4 Working Time Management: Demand-Oriented Personnel Logistics
2. Trends and Developments
   - 2.1 The History of Global Trade Logistics - From the Early Forms of Logistics Optimization to Digitalization
   - 2.2 The Tension between Liberalization and Protectionism
   - 2.3 Disruptive Innovations in Retail Logistics Yesterday and Today
   - 2.4 Humans in the Robotized World of Work - an Indispensable Disruptive Factor?

3. Digital Value Networks
   - 3.1 Self-Controlling Systems - Technologies and Organization - Swarm Intelligence
   - 3.2 3D Printing and Implications for Retail Logistics
   - 3.3 Logistics Processes in a Digital World
   - 3.4 E-Commerce and E-Logistics

4. Handling Large Amounts of Data
   - 4.1 Challenges and Strategies in Dealing with Big Data
   - 4.2 Technical Solutions in Various Fields of Application
   - 4.3 Cloud Services
   - 4.4 Security and Data Protection

5. Global Trade in a Digital World
   - 5.1 Adaptive Trade and Supply Chains
   - 5.2 Design and Redesign of Global Retail Chains
   - 5.3 Digitization of Global Production and Supply Networks
   - 5.4 Education for the Digitalized World

Literature

Compulsory Reading

Further Reading

- Ali, M., Khan, S. U., & Vasilakos, A. V. (2015). Security in cloud computing: Opportunities andchallenges. Information Sciences, 305(1), 357—383.
- Laudon, K. C., & Traver, C. G. (2019). E-commerce 2019: Business, technology, and society (15th ed.,Global ed.). Pearson.
- Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationshipsto sustainable supply chain management. International Journal of Production Research, 57(7),2117—2135.
- Tian, Z., & Chen, L. (2020). The self-organization process of logistics industry system. In L. Menggand, Z. Runtong, X. Shang, M. Dresner, & G. Hua (Eds.), IEIS2019: Proceedings of the 6thinternational conference and industrial security engineering (pp. 459—472). Springer.
- Vazquez, E. E. (2019). Effect of e-retail product category on performance. In G. Granata, A. M.Tartaglione, & T. Tsiakis (Eds.), Predicting trends and building strategies for consumerengagement in retail environments (pp. 152—168). IGI Global Publishing.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

Self-Driving Vehicles

Module Code: DLBDSEAD1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Ha Ngo (Self-Driving Vehicles)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Self-Driving Vehicles (DLBDSEAD01)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Duales myStudium Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Safety Standards
- Sensor Fusion
- Computer Vision
- Localization & Motion
- Motion Planning

Learning Outcomes

Self-Driving Vehicles

On successful completion, students will be able to

- cite relevant safety standards.
- grasp the concepts of sensors and sensor fusion.
- apply computer vision techniques to detect features.
- evaluate images in terms of semantic segmentation.
- understand motion models and localization approaches.
- utilize motion planning techniques.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Self-Driving Vehicles

Course Code: DLBDSEAD01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course focuses on the foundations of autonomous vehicles and starts with a detailed introduction to relevant safety standards in terms of functional and IT security.This course continues with a presentation of the concept of sensor fusion and discusses relevant aspects of computer vision techniques such as feature detection, calibration, and semantic segmentation.A large part of the course concerns localization and motion planning. Relevant motion models are introduced and localization techniques such as odometry, triangulation, and satellite-based systems are discussed in detail, along with path planning, motion prediction, and trajectory generation.

Course Outcomes

On successful completion, students will be able to

- cite relevant safety standards.
- grasp the concepts of sensors and sensor fusion.
- apply computer vision techniques to detect features.
- evaluate images in terms of semantic segmentation.
- understand motion models and localization approaches.
- utilize motion planning techniques.

Contents

1. Sensors
   - 1.1 Physical principles of sensors
   - 1.2 Types of sensors
   - 1.3 Sensor calibration
   - 1.4 Application scenarios
2. Sensor Fusion
   - 2.1 Elaborating data from sensors
   - 2.2 The Kalman filter
   - 2.3 Object tracking
3. Computer Vision
   - 3.1 Pixels and filters

3.2 Feature detection
3.3 Semantic segmentation

4. Localization & Motion
   4.1 Motion models
   4.2 Trilateration
   4.3 Satellite-based localization

5. Motion planning
   5.1 Mission planning
   5.2 Behavior Planning
   5.3 Local Planning

6. Safety Standards
   6.1 Functional Safety
   6.2 Safety of Intended Functionality
   6.3 IT Security

Literature

Compulsory Reading

Further Reading

- LaValle, S. M. (2006). Planning algorithms. Cambridge University Press.
- Sciavicco, L., Villani, L., Oriolo, G., & Siciliano, B. (2009). Robotics: modelling, planning andcontrol. Springer.
- Thrun, S. (2002). Probabilistic robotics. Communications of the ACM, 45(3), 52-57.
- Watzenig, D., & Horn, M. (2016). Automated driving: Safer and more efficient future driving. Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Practice Exam
- ☑ Online Tests

Seminar: Current Topics and Trends in Self-Driving Technology

Module Code: DLBDSEAD2

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Ha Ngo (Seminar: Current Topics and Trends in Self-Driving Technology)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Seminar: Current Topics and Trends in Self-Driving Technology (DLBDSEAD02)

Module Exam Type	
Module Exam Study Format: Distance Learning Written Assessment: Research Essay Study Format: Duales myStudium Written Assessment: Research Essay Study Format: myStudies Written Assessment: Research Essay	**Split Exam**
Weight of Module see curriculum	

Module Contents

The seminar covers current topics of autonomous vehicles. The choice of topics can include (but are not limited to) recent technical advances as well as philosophical issues or implications for society, law, or relevant industries.

Learning Outcomes

Seminar: Current Topics and Trends in Self-Driving Technology

On successful completion, students will be able to

- transfer theoretical knowledge and methods to new domains.
- understand recent developments in self-driving vehicles.
- create new insights based on detailed studies of current research and technology.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Seminar: Current Topics and Trends in Self-Driving Technology

Course Code: DLBDSEAD02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This courses focuses on recent developments in the field of self-driving vehicles. Following the course Self-Driving Vehicles (DLBDSEAD01), in this course students will focus on a particular topic in the context of autonomous driving, applying the knowledge they have obtained in the first course.Finally, a research essay will be written.

Course Outcomes

On successful completion, students will be able to

- transfer theoretical knowledge and methods to new domains.
- understand recent developments in self-driving vehicles.
- create new insights based on detailed studies of current research and technology.

Contents

- The seminar covers current topics of autonomous vehicles. The choice of topics can include (but are not limited to) recent technical advances as well as philosophical issues or implications for society, law, or relevant industries.

Literature

Compulsory Reading

Further Reading

- Ben-Ari, M., & Mondada, F. (2018). Elements of robotics. Springer.
- European Union. (2001). Directive 2001/95/EC.
- Fisher, R. B., Breckon, T. P., Dawson-Howe, K., Fitzgibbon, A., Robertson, C., Trucco, E., & Williams, C. K. I. (2016). Dictionary of computer vision and image processing. John Wiley & Sons.
- Smith, D. J., & Simpson, K. (2016). The safety critical systems handbook (4th ed.). Elsevier.
- Smith, D. J. (2017). Reliability, maintainability, and risk (9th ed.). Elsevier.
- Society of Automobile Engineers International. (2012). SAE J3061.
- Szeliski, R. (2022). Computer vision: Algorithms and applications (2nd ed.). Springer.
- Wang, P. K.-C. (2015). Visibility-based optimal path and motion planning (Vol. 568). Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Seminar

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Seminar

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Project: Sustainable Entrepreneurship

Module Code: DLBEPWSEP1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Dr. Karsten Hurrelmann (Project: Sustainable Entrepreneurship)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Sustainable Entrepreneurship (DLBEPWSEP01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

Sustainable Entrepreneurship deals with the basics of sustainability and sustainable business idea generation and development. It provides students not only with the understanding of the fundamentals of doing business in a sustainable manner, but as well offers the practical experience to develop a sustainable business idea.

Learning Outcomes

Project: Sustainable Entrepreneurship

On successful completion, students will be able to

- understand the relevance and different types of sustainable business ideas and models,
- develop a market-oriented business idea with a high sustainable impact for a relevant problem using the principles of sustainable entrepreneurship and business models,
- classify and relate their developed business ideas with typical frameworks of sustainable entrepreneurship, e.g. UN sustainable development goals (SDGs),
- discuss potential business models and funding options for their sustainable business idea, define and conduct a market test to prove the value proposition, business, and market potential,
- estimate and calculate the concrete sustainable impact, e.g. decarbonization effect, reduction of waste, changing people's behavior and lifestyle towards sustainability,
- recognize and design for their sustainable business idea the relevant marketing and distribution measures to spread their sustainable ideas.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Quality and Sustainability Management	All Bachelor Programs in the Management field

Project: Sustainable Entrepreneurship

Course Code: DLBEPWSEP01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students learn to develop a sustainable business idea using current methods of sustainable business modelling and entrepreneurship. The impact of the business idea due to sustainability will be estimated and transformed into the major element of the value proposition. By doing so, the students will not only learn the fundamentals of sustainable entrepreneurship, but as well experience them by their own real development of a sustainable business idea.

Course Outcomes

On successful completion, students will be able to

- understand the relevance and different types of sustainable business ideas and models,
- develop a market-oriented business idea with a high sustainable impact for a relevant problem using the principles of sustainable entrepreneurship and business models,
- classify and relate their developed business ideas with typical frameworks of sustainable entrepreneurship, e.g. UN sustainable development goals (SDGs),
- discuss potential business models and funding options for their sustainable business idea, define and conduct a market test to prove the value proposition, business, and market potential,
- estimate and calculate the concrete sustainable impact, e.g. decarbonization effect, reduction of waste, changing people's behavior and lifestyle towards sustainability,
- recognize and design for their sustainable business idea the relevant marketing and distribution measures to spread their sustainable ideas.

Contents

- New entrepreneurial businesses can provide innovative solutions to the many contemporary sustainability challenges faced by societies and economies. The course will teach the concept of sustainable business models and their role for sustainable entrepreneurship. Students will learn how to develop ideas and experiment with sustainable business models, with a focus on the value proposition and the sustainable impact at the heart of these models. The ideas address sustainability or climate crisis challenges transforming them into value propositions as well as test these in the field. Based on the creation of a self-developed sustainable business idea and model students will go through the complete process of sustainable business modelling. The important step of the process is the development of a sustainable business idea for a relevant problem (using the SDG framework: the UN sustainable development goals, definition of the value proposition and

market-oriented business model incl. funding options). In addition, core tasks of the course are the estimation and calculation of the sustainable impact of the new developed idea in comparison to existing solutions in the market. Hereby, the emphasis is to outline the impact by showing e.g. the decarbonization effect of the idea. The course is framed as a problem-based and practise-oriented learning experience. Therefore, the project of each student will describe the sustainable business idea with its business model and impact estimations. The sustainable business idea can be either a self-developed or fictitious idea.

Literature

Compulsory Reading

Further Reading

- Ibisch, P./Molitor, H./Conrad, A./Walk, H./Mihotovic, V./Geyer, J. (2019): Humans in the global ecosystem: An introduction to sustainable development, Oekom, München.
- Bland, D./Osterwalder, A. (2019): Testing Business Ideas. Wiley & Sons, Inc. Hoboken, New Jersey.
- United Nations Environment Programme (UNEP (2016): A framework for shaping sustainable lifestyles – Determinants and strategies. UNEP, Nairobi.
- Osterwalder, A./Pigneur, Y./Bernarda, G./Smith, A. (2014): Value Proposition Design: How to Create Products and Services Customers Want. Wiley & Sons, Inc. Hoboken, New Jersey.
- Boons, F./Lüdeke-Freund, F. (2013): Business models for sustainable innovation: state-of-the-art and steps towards a research agenda, Journal of Cleaner Production, 45, p. 9–19.
- Schaltegger, S./Wagner, M. (2011): Sustainable entrepreneurship and sustainability innovation: categories and interactions, Business Strategy and the Environment, 20(4), p. 222–237.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Smart Factory

Module Code: DLBDSESF1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Sahar Qaadan (Smart Factory)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Smart Factory (DLBDSESF01)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Motivation and Definition of Terms
- Development of Automation
- Technological Basics and Standards
- Basic concepts of a Smart Factory
- Reference Architectures
- Smart Factory Engineering
- Safety and Security

Learning Outcomes

Smart Factory

On successful completion, students will be able to

- understand the term Smart Factory in the context of Industry 4.0.
- be able to trace the development of automation to a fully autonomous, non-centrally organized production plant.
- understand the basic technologies and standards used to design and operate a Smart Factory.
- understand the essential concepts of a Smart Factory.
- identify and differentiate between the individual elements of a Smart Factory using different reference architectures.
- understand the special engineering challenges in the Smart Energy context.
- understand the special safety risks of digitized and networked production plants and assign concrete recommendations for action.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Smart Factory

Course Code: DLBDSESF01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students will gain a deeper insight into the networking and digitization of production facilities by examining a Smart Factory. For this purpose, they will be familiarized with the basic goals of a Smart Factory in the context of the research complex Industry 4.0. After a brief introduction to the history of automation, students will learn the technical basics and standards required to design and operate a Smart Factory. Building on this, they will learn how these individual technologies are used to implement the central concepts of a Smart Factory. In order to understand which components a Smart Factory consists of, different reference architectures are presented and compared. The course concludes with the special engineering challenges of an autonomously acting and decentralized production plant. Above all, this includes IT security, which is particularly relevant due to the digital networking of production facilities and products.

Course Outcomes

On successful completion, students will be able to

- understand the term Smart Factory in the context of Industry 4.0.
- be able to trace the development of automation to a fully autonomous, non-centrally organized production plant.
- understand the basic technologies and standards used to design and operate a Smart Factory.
- understand the essential concepts of a Smart Factory.
- identify and differentiate between the individual elements of a Smart Factory using different reference architectures.
- understand the special engineering challenges in the Smart Energy context.
- understand the special safety risks of digitized and networked production plants and assign concrete recommendations for action.

Contents

1. Motivation and Definition of Terms
    - 1.1 Goals of Smart Factory
    - 1.2 Internet of Things
    - 1.3 Cyber-Physical Systems
    - 1.4 Cyber-Physical Production Systems
    - 1.5 Smart Factory as a Cyber-Physical (Production) System

2. Development of Automation
   - 2.1 Automation Pyramid
   - 2.2 Networked, Decentralized Organization of Production
   - 2.3 Future Challenges

3. Technological Basics and Standards
   - 3.1 Identification of Physical Objects
   - 3.2 Formal Description Languages and Ontologies
   - 3.3 Digital Object Memory
   - 3.4 Physical Situation Recognition
   - 3.5 (Partially) Autonomous Action and Cooperation
   - 3.6 Human-Machine Interaction
   - 3.7 Machine to Machine Communication

4. Basic Concepts of a Smart Factory
   - 4.1 Order-Controlled Production
   - 4.2 Bundling of Machine and Production Data
   - 4.3 Supporting People in Production
   - 4.4 Intelligent Products and Resources
   - 4.5 Smart Services

5. Reference Architectures
   - 5.1 Purpose and Properties of Reference Architectures
   - 5.2 Overview of Standardization Initiatives
   - 5.3 CyProS Reference Architecture
   - 5.4 RAMI 4.0 (DIN SPEC 91345)

6. Smart Factory Engineering
   - 6.1 Classification of Different Engineering Tools
   - 6.2 Virtual Engineering
   - 6.3 User-Centered Design
   - 6.4 Requirements Engineering
   - 6.5 Modelling
   - 6.6 Integration of Classic and Smart Components

Literature
Compulsory Reading
Further Reading ▪ Butun, I. (2020). Industrial IoT: Challenges, design principles, applications, and security. Springer. ▪ Drossel, W. G., Ihlenfeldt, S., Lanzger, T., & Dumitrescu, R. (2019). Cyber-physical systems. In R. Neugebauer (Ed.), Digital transformation (pp. 189—213). Springer. ▪ Durakbasa, N. M., & Gençyılmaz, M. G. (Eds.). (2021). Digital conversion on the way to Industry 4.0. Springer. ▪ Ustundag, A., & Cevikcan, E. (2018). Industry 4.0: Managing the digital transformation. Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Project: Smart Factory

Module Code: DLBDSESF2

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Sahar Qaadan (Project: Smart Factory)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Smart Factory (DLBDSESF02)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Project Report Study Format: myStudies Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

A catalogue with the currently provided tasks is provided on the online platform of the module. It provides the content basis of the module and can be supplemented or updated by the seminar leader.

Learning Outcomes

Project: Smart Factory

On successful completion, students will be able to

- have a deeper understanding of the technologies and standards in the context of Smart Factory.
- apply technologies in the context of Smart Factory to a simple practical example.
- design a hardware or software prototype for a selected task.
- document, design, and develop activities in the form of a project report.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Smart Factory

Course Code: DLBDSESF02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students select a concrete task from the catalog of topics provided in consultation with the seminar leader. They will work on the task in a prototyping environment suited to the task, which can be either a hardware (e.g., prototyping boards) or software (e.g., technology-specific development environments) environment. To complete the task, students apply the concepts, methods, and tools taught in the Smart Factory I course. They document their results with a project report.

Course Outcomes

On successful completion, students will be able to

- have a deeper understanding of the technologies and standards in the context of Smart Factory.
- apply technologies in the context of Smart Factory to a simple practical example.
- design a hardware or software prototype for a selected task.
- document, design, and develop activities in the form of a project report.

Contents

- A catalogue with the currently provided tasks is provided on the online platform of the module. It provides the content basis of the module and can be supplemented or updated by the seminar leader.

Literature
Compulsory Reading
Further Reading ▪ Arey, D., Le, C. H. & Gao, J. (2021). Lean industry 4.0: a digital value stream approach to process improvement. Procedia Manufacturing, 54, 19–24. ▪ Hartmann, L., Meudt, T., Seifermann, S. & Metternich, J. (2018). Value stream method 4.0: holistic method to analyse and design value streams in the digital age. Procedia CIRP, 78, 249–254. ▪ Luscinski, S. & Ivanov, V. (2020). A Simulation Study of Industry 4.0 Factories based on the Ontology on Flexibility with using FlexSim Software. Management and Production Engineering Review (volume 11, number 3), S. 74–83. ▪ Meroni, G., Baresi, L., Montali, M. & Plebani, P. (2017). Multi-party business process compliance monitoring through IoT-enabled artifacts. Information Systems, 73, 61-78. ▪ OMG (2014). Business Process Model and Notation (BPMN). Version 2.0.2

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods	
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Exam Preparation** ☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods	
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Exam Preparation** ☑ Guideline

Embedded Systems

Module Code: DLBROES_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Jacko Nudzor (Embedded Systems)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Embedded Systems (DLBROES01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Embedded systems architecture
- Embedded hardware
- Embedded software
- Embedded Operating Systems
- Distributed systems and IoT architecture

Learning Outcomes

Embedded Systems

On successful completion, students will be able to

- understand the architecture of embedded systems.
- understand real-time embedded systems.
- design the main architecture of embedded systems for robotics, automation and IoT infrastructure.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology field

Embedded Systems

Course Code: DLBROES01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

To realize working engineering systems, embedded systems are required. Through embedding microprocessor-based systems capable of networking, data exchange and processing, the functionality of products and systems can be enhanced in terms of features, precision, accuracy, dynamic properties, intelligence. Actually, an embedded system is where everything begins. This course provides the basics on embedded system, by focusing on the architectural patterns of modern systems and platforms. The embedded hardware and software aspects are addressed. This course also introduces connectivity and networking aspects, which are required to build distributed systems for the internet of things and the industrial internet of things (finally yielding Cyber-Physical Systems).

Course Outcomes

On successful completion, students will be able to

- understand the architecture of embedded systems.
- understand real-time embedded systems.
- design the main architecture of embedded systems for robotics, automation and IoT infrastructure.

Contents

1. Introduction
   - 1.1 Embedded Systems Overview
   - 1.2 Hardware Elements of an Embedded System
   - 1.3 Standards, Compilers and Programming Languages
2. Elements of a Microcontroller
   - 2.1 Central Processing Units
   - 2.2 Volatile and non-volatile memory
   - 2.3 Digital/Analog Input/Output
   - 2.4 Timing peripherals
   - 2.5 Communication peripherals
3. Programming a Microcontroller

3.1 Bone Structure of a Microcontroller Software
3.2 Low-Level Programming
3.3 Usage of Middle-Level Libraries
3.4 Common IDEs and Tools

4. Embedded Operating Systems
   4.1 Task Management
   4.2 Scheduler
   4.3 Examples of Embedded Operating Systems

5. Distributed Systems and IoT Architecture
   5.1 Network Interfaces
   5.2 The Internet Protocol
   5.3 Examples of Distributed Systems

Literature

Compulsory Reading

Further Reading

- Noergaard, T. (2013). Embedded systems architecture: A comprehensive guide for engineers and programmers (2nd ed.). Newnes.
- White, E. (2011). Making embedded systems: Design patterns for great software. O'Reilly Media.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Mobile Robotics

Module Code: DLBROESR1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Florian Simroth (Mobile Robotics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Mobile Robotics (DLBROESR01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Case Study Study Format: myStudies Written Assessment: Case Study	

Weight of Module

see curriculum

Module Contents

- Locomotion
- Kinematics and dynamics
- Perception
- Mobile manipulators
- Path motion and task planning
- Localization and mapping

Learning Outcomes

Mobile Robotics

On successful completion, students will be able to

- understand mobile robot locomotion, kinematics, and dynamics.
- model and simulate a wheeled, legged, or aerial mobile robot.
- understand common approaches for localization and mapping.
- apply and simulate path, motion, and task planning algorithms.
- simulate and understand mobile manipulators.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Mobile Robotics

Course Code: DLBROESR01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Modern robots are mobile robots, able to move in spaces and perform tasks autonomously. This is for instance what is done by household robots, or by robots working in warehouses. In the last years, such robots have been improved by the implementation of advanced localization and task planning algorithms, which are based on the fundamentals of mobile robot kinematics and dynamics. This course starts with an introduction to the main concepts of robot locomotion, presenting the three main categories of mobile robots, namely legged, wheeled and aerial (often called drones). As second focus lies on the necessary mathematical foundation. This course, thus, discusses kinematics and dynamics of mobile robots. The topic of how a mobile robot can perceive the surrounding world is treated in detail in a third part of this course, where sensors for mobile robots are introduced together with an introduction on advanced topics such as robot vision and image processing. The last part of this course describes the main approaches for localization, mapping and motion and task planning. A brief overview on combination of mobile robots and manipulators, i.e., mobile manipulators, is also given.

Course Outcomes

On successful completion, students will be able to

- understand mobile robot locomotion, kinematics, and dynamics.
- model and simulate a wheeled, legged, or aerial mobile robot.
- understand common approaches for localization and mapping.
- apply and simulate path, motion, and task planning algorithms.
- simulate and understand mobile manipulators.

Contents

1. Locomotion
   - 1.1 Basics
   - 1.2 Legged Mobile Robots
   - 1.3 Wheeled Mobile Robots
   - 1.4 Aerial Mobile Robots
2. Kinematics
   - 2.1 Basics
   - 2.2 Kinematic Models and Constraints

- 2.3 Mobile Robot Maneuverability
- 2.4 Mobile Robot Workspace
- 2.5 Applications

3. Dynamics
   - 3.1 Basics
   - 3.2 Dynamic Modeling
   - 3.3 Examples

4. Perception
   - 4.1 Sensors for Mobile Robots
   - 4.2 Position and Velocity Sensors
   - 4.3 Accelerometers
   - 4.4 Inertial Measurement Unit
   - 4.5 Distance Sensors
   - 4.6 Vision Sensors
   - 4.7 Robot Vision and Image Processing
   - 4.8 Global Positioning System

5. Mobile Manipulators
   - 5.1 Basics
   - 5.2 Modeling
   - 5.3 Examples

6. Path, Motion and Task Planning
   - 6.1 Basics
   - 6.2 Path Planning
   - 6.3 Motion Planning
   - 6.4 Task Planning

7. Localization and Mapping
   - 7.1 Sensor Imperfections
   - 7.2 Relative Localization
   - 7.3 Absolute Localization
   - 7.4 Localization, Calibration and Sensor Fusion
   - 7.5 Simultaneous Localization and Mapping
   - 7.6 Examples

Literature
Compulsory Reading
Further Reading ▪ Corke, P. (2017): Robotics, Vision and Control: Fundamental Algorithms In MATLAB. 2nd ed., Springer International Publishing, Cham. ▪ Siciliano, B./Khatib, O. (eds.) (2016): Springer Handbook of Robotics. Springer International Publishing, Cham. ▪ Siegwart, R./Nourbakhsh, I. R./Scaramuzza, D. (2011): Introduction to Autonomous Mobile Robots. The MIT Press, Cambridge, MS. ▪ Tzafestas, S. G. (2013): Introduction to Mobile Robot Control. Elsevier Inc, Amsterdam.

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Seminar: Human-Robot Interaction

Module Code: DLBROSHRI_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Amir Al-Munajjed (Seminar: Human-Robot Interaction)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Seminar: Human-Robot Interaction (DLBROSHRI01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Research Essay Study Format: myStudies Written Assessment: Research Essay	

Weight of Module

see curriculum

Module Contents

In this course several aspects in the design field of human-robot interaction will be investigated, ranging from fundamentals (design basics, ethics) to application in robot design, such as finding metrics for the assessment of the emotional impact of a robot design, as well as ongoing and future developments (e.g., use of artificial intelligence).

Learning Outcomes

Seminar: Human-Robot Interaction

On successful completion, students will be able to

- understand state-of-the-art human-robot interaction approaches and accompanying problems.
- name important design issues for social robots.
- measure the emotional component of robots.
- apply design patterns to develop social robots.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology field

Seminar: Human-Robot Interaction

Course Code: DLBROSHRI01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Over the past few years, significant technological development has been made in the field of Robotics and Design. Whereas industrial robots have replaced a significant proportion of human workers in industrial environments, the last decades have witnessed the development of robots designed to work together with humans. With this developments Human-Robot Interaction, i.e., a robot design methodology which considers theses interactions, has become a requirement. Robots are increasingly becoming a part of human lives and will impact human lives even more in the future. Innovative design approaches such as emotional design, based on pleasure and usability, are effective methods to develop innovative robots that can properly interact and communicate with humans, also at an emotional level. This course provides an overview on technological and design issues about “social robot design”.

Course Outcomes

On successful completion, students will be able to

- understand state-of-the-art human-robot interaction approaches and accompanying problems.
- name important design issues for social robots.
- measure the emotional component of robots.
- apply design patterns to develop social robots.

Contents

- In this course several aspects in the design field of human-robot interaction will be investigated, ranging from fundamentals (design basics, ethics) to application in robot design, such as finding metrics for the assessment of the emotional impact of a robot design, as well as ongoing and future developments (e.g., use of artificial intelligence).

Literature
Compulsory Reading
Further Reading ▪ Ayanoğlu, H./Duarte, E. (Eds.) (2019): Emotional Design in Human-Robot Interaction. Springer International Publishing, Chams. ▪ Brooks, R. A. (2003): Flesh and machines: how robots will change us. Vintage Books, New York City, NY. ▪ Kanda, T./Ishiguro, H. (2013): Human-Robot Interaction in Social Robotics. CRC Press, Boca Raton, FL.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Seminar

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Research Essay

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Smart Devices

Module Code: DLBINGSD1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Sheik Radiah Ravim Rivu (Smart Devices)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Smart Devices (DLBINGSD01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: Duales myStudium Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Overview and introduction
- Smart devices
- Technological features
- Communication and networking
- User interfaces
- Ubiquitous computing

Learning Outcomes

Smart Devices

On successful completion, students will be able to

- recall the historical development of assistance systems towards smart devices.
- classify and define different types and examples of smart devices with regard to their properties.
- know typical features of smart devices.
- identify different communication standards with which smart devices can communicate with their environment.
- recognize different approaches with which smart devices can be controlled.
- classify smart devices as elements of ubiquitous computing.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Smart Devices

Course Code: DLBINGSD01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students are familiarized with the properties and applications of smart devices. In doing so, the possible applications in the context of Industry 4.0 are specifically highlighted. For this purpose, current trends in microsystems technology are discussed alongside assistance functions in production, e.g. through data glasses or other wearables. In addition to the typical technological features, this course also teaches the basics of various interfaces with which a smart device interacts with its environment. These include, on the one hand, wireless system ports linked to other devices and, on the other hand, various selections for controlling the devices via a user interface. This course concludes with a classification of smart devices in the field of ubiquitous computing.

Course Outcomes

On successful completion, students will be able to

- recall the historical development of assistance systems towards smart devices.
- classify and define different types and examples of smart devices with regard to their properties.
- know typical features of smart devices.
- identify different communication standards with which smart devices can communicate with their environment.
- recognize different approaches with which smart devices can be controlled.
- classify smart devices as elements of ubiquitous computing.

Contents

1. Overview and Introduction
   - 1.1 Historical Development of Smart Devices
   - 1.2 Technological Pioneers for Smart Devices
   - 1.3 Smart Devices in the Internet of Things
2. Properties and Applications
   - 2.1 Typical Properties and Classification
   - 2.2 Example Devices
   - 2.3 Smart Devices in Microsystems Technology (MEMS)
   - 2.4 Further Fields of Application

3. Technological Features
   - 3.1 Processors
   - 3.2 Sensors
   - 3.3 Radio Interfaces

4. Communication and Networking
   - 4.1 Personal Area Networks
   - 4.2 Local Area Networks
   - 4.3 Body Area Networks
   - 4.4 Middleware for Smart Devices
   - 4.5 Open Core Interface

5. User Interfaces
   - 5.1 Touch Control
   - 5.2 Gesture Control
   - 5.3 Voice Control
   - 5.4 Multimodal Control

6. Ubiquitous Computing
   - 6.1 Aims and Basic Properties of Ubiquitous Systems
   - 6.2 Examples for Ubiquitous Systems
   - 6.3 Context Sensitivity
   - 6.4 Autonomy
   - 6.5 Smart Device Management

Literature
Compulsory Reading
Further Reading ▪ Fortino, G., & Trunfio, P. (2014). Internet of Things Based on Smart Objects: Technology, Middleware and Applications. Springer International Publishing. ▪ López, T. S. et al. (2011). Taxonomy, Technology and Applications of Smart Objects. Information Systems Frontiers, 13(2), 281–300. ▪ McTear, M., Callejas, Z., & Griol, D. (2016). The Conversational Interface: Talking to Smart Devices. Springer International Publishing. ▪ Nihtianov, S., & Luque, A. (2014). Smart Sensors and MEMS: Intelligent Devices and Microsystems for Industrial Applications. Woodhead. ▪ Poslad, S. (2009). Ubiquitous Computing: Smart Devices, Environments and Interactions (2nd ed.). Wiley. - Sendler, U. (Ed.) (2018). The Internet of Things – Industrie 4.0 Unleashed. Springer. ▪ Vinoy, K. J. et al. (Eds.) (2014). Micro and Smart Devices and Systems. Springer India.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Project: Smart Devices

Module Code: DLBINGSD2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Tamer Abdalrahman (Project: Smart Devices)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Smart Devices (DLBINGSD02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Project Report Study Format: Duales myStudium Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

In-depth study of a selected topic in the field of smart devices and work on a practical task in a prototyping environment.

Learning Outcomes

Project: Smart Devices

On successful completion, students will be able to

- have an in-depth understanding of the technologies and standards in the context of smart devices.
- apply technologies in the context of smart devices using a simple practical example.
- design a hardware or software prototype for a selected task.
- document design and development activities in the form of a project report.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Smart Devices

Course Code: DLBINGSD02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students select one assignment from the provided topic catalogue in consultation with the tutor. They work on the task with the help of a prototyping environment that fits the subject matter of the assignment. The environments can be hardware (e.g. prototyping boards) or software (e.g. technology-specific development environments). To complete the task, students apply concepts, methods and tools taught in the Smart Devices I course. They document their results in a project report.

Course Outcomes

On successful completion, students will be able to

- have an in-depth understanding of the technologies and standards in the context of smart devices.
- apply technologies in the context of smart devices using a simple practical example.
- design a hardware or software prototype for a selected task.
- document design and development activities in the form of a project report.

Contents

- A catalogue with currently available assignments is provided on the online learning platform. It provides the content basis of the module and can be supplemented or updated by the tutor.

Literature

Compulsory Reading

Further Reading

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods	
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Exam Preparation** ☑ Guideline

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods	
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Exam Preparation** ☑ Guideline

Smart Mobility

Module Code: DLBINGSM1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Dorian Mora (Smart Mobility)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Smart Mobility (DLBINGSM01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Introduction and Definitions
- Overview Over Traditional Mobility Infrastructure Approaches
- Alternative Approaches to Mobility
- Services for Smart Mobility
- Overview Over Relevant Technologies and Standards
- Car2x Communication
- Examples and Use-Cases

Learning Outcomes

Smart Mobility

On successful completion, students will be able to

- remember several types of mobility.
- understand distinct reasons for designing intelligent mobility systems.
- analyze diverse types of mobility infrastructure regarding their properties and access requirements.
- understand various alternative mobility approaches.
- remember a range of services that relevant for Smart Mobility.
- understand the relevant technologies and standards for connecting infrastructure elements and services.
- understand use cases for Car2X communication and the relevant standards and technologies.
- remember example projects in the context of Smart Mobility.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Smart Mobility

Course Code: DLBINGSM01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course gives an introduction and overview into the future of mobility. Starting from an understanding of traditional and current mobility infrastructure, alternative approaches are introduced. The course discusses a range of services that are typical for smart mobility solutions. The course includes a detailed discussion on technologies and standards relevant for smart mobility, in particular in Car2X communication. A range of projects and examples are discussed to illustrate the application of smart mobility approaches in a real-life context.

Course Outcomes

On successful completion, students will be able to

- remember several types of mobility.
- understand distinct reasons for designing intelligent mobility systems.
- analyze diverse types of mobility infrastructure regarding their properties and access requirements.
- understand various alternative mobility approaches.
- remember a range of services that relevant for Smart Mobility.
- understand the relevant technologies and standards for connecting infrastructure elements and services.
- understand use cases for Car2X communication and the relevant standards and technologies.
- remember example projects in the context of Smart Mobility.

Contents

1. Introduction and Definitions
    - 1.1 Types of Mobility
    - 1.2 Smart Mobility and Smart City
    - 1.3 Efficient use of energy
    - 1.4 Emissions
    - 1.5 Security
    - 1.6 Comfort
    - 1.7 Cost Effectiveness
2. Overview over traditional mobility infrastructure approaches

- 2.1 Properties and Access Requirements
- 2.2 Infrastructure Planning
- 2.3 Disadvantages of Isolated Infrastructures

3. Alternative approaches to mobility
   - 3.1 Park and Ride
   - 3.2 Car-Sharing
   - 3.3 Rent A Bike
   - 3.4 Carpooling

4. Services for smart mobility
   - 4.1 Authorization
   - 4.2 Payment
   - 4.3 Booking
   - 4.4 Navigation
   - 4.5 Security
   - 4.6 Hybrid Services

5. Overview over relevant technologies and standards
   - 5.1 Mobile Devices
   - 5.2 Mobile Networks and Wireless LAN
   - 5.3 NFC and RFID
   - 5.4 Outdoor and Indoor Localization
   - 5.5 Technologies for Traffic Monitoring

6. Car2X Communication
   - 6.1 Use Cases
   - 6.2 Elements of a Car2X System
   - 6.3 Technologies and Standards
   - 6.4 Sample Implementations

7. Examples and use-cases
   - 7.1 Octopus (Hong Kong)
   - 7.2 Amsterdam Practical Trial
   - 7.3 Mobincity

Literature
Compulsory Reading
Further Reading ▪ Fluegge, B. (2017): Smart Mobility – Connecting Everyone: Trends, Concepts and Best Practices Paperback. Springer/Vierweg, Wiesbaden. ▪ Handke, V./Jonuschat, H. (2013): Flexible Ridesharing. New Opportunities and Service Concepts for Sustainable Mobility. Springer, Berlin/Heidelberg. ▪ Inderwildi, O./King, D. (Eds.) (2012): Energy, Transport, & the Environment. Addressing the Sustainable Mobility Paradigm. Springer, London. ▪ Nathanail, E./Karakikes, I. (2018): Data Analytics: Paving the Way to Sustainable Urban Mobility: Proceedings of 4th Conference on Sustainable Urban Mobility (CSUM2018). Springer, London. ▪ Papa, R./Fistola, R./Gargiulo, C. (2018): Smart Planning: Sustainability and Mobility in the Age of Change (Green Energy and Technology). Springer, London. ▪ Planing, P. et al (2020): Innovations for Metropolitan Areas: Intelligent Solutions for Mobility, Logistics and Infrastructure designed for Citizens. Springer, London. ▪ Sashinskaya, M. (2015): Smart Cities in Europe. Open Data in a Smart Mobility Context. Createspace Independent Publishing Platform.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Project: Smart Mobility

Module Code: DLBINGSM2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Dorian Mora (Project: Smart Mobility)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Smart Mobility (DLBINGSM02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

In-depth analysis of a specific topic in the context of Smart Mobility in form of a prototype report.

Learning Outcomes

Project: Smart Mobility

On successful completion, students will be able to

- have an in-depth understanding of the technologies and standards in the context of Smart Mobility.
- apply technologies in the context of Smart Mobility using a simple practical example.
- design a hardware or software prototype for a selected task.
- document design choices and development tasks in the form of a project report.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Smart Mobility

Course Code: DLBINGSM02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In the course Smart Mobility II, students are asked to choose an assignment provided by the course tutor to apply the concepts and methods covered in Smart Mobility I in a specific use case or application area. The students will develop a prototype focused on a specific topic related to smart mobility. The prototype can be developed either as a hardware setup or a software solution. The students document their results in a project report.

Course Outcomes

On successful completion, students will be able to

- have an in-depth understanding of the technologies and standards in the context of Smart Mobility.
- apply technologies in the context of Smart Mobility using a simple practical example.
- design a hardware or software prototype for a selected task.
- document design choices and development tasks in the form of a project report.

Contents

- A catalogue with currently available assignments is provided on the online learning platform. It provides the content basis of the module and can be supplemented or updated by the tutor.

Literature

Compulsory Reading

Further Reading

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint	☑ Slides	☑ Guideline

Smart Services

Module Code: DLBDBESS1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Holger Klus (Smart Services)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Smart Services (DLBINGSS01_E)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Digitization and Disruption
- Potential of Smart Services
- Development and Specification of Smart Services
- Service Architectures
- Integration Platforms
- Technologies for Smart Services
- Quality and Operation of Smart Services

Learning Outcomes

Smart Services

On successful completion, students will be able to

- recognize the relevance of Smart Services in the context of digitization in general and Industry 4.0 in particular.
- identify special features of digital business models and demonstrate them using the example of digital intermediaries.
- apply methods to uncover digitization potentials and use the Business Model Canvas to classify them in a business model.
- know and use models for the multi-perspective specification of services.
- know selected architectures for the design and integration of services.
- distinguish different technologies that are required for the development of services.
- define the quality of services by means of Service Level Agreements.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Smart Services

Course Code: DLBINGSS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students study concepts and methods for the development of Smart Services. For this purpose, an introduction of the term in the context of digitization and Industry 4.0 will be given. Based on this, this course shows how innovative services can have a disruptive effect on existing business models or even markets using the example of digital intermediaries. Subsequently, students will be taught selected methods and techniques with which digitization potentials can be recognized and modelled. In addition, selected architectures and platforms for the integration of services are presented. Finally, relevant technologies for the implementation of smart services are taught and it is briefly described how the quality of services can be agreed upon.

Course Outcomes

On successful completion, students will be able to

- recognize the relevance of Smart Services in the context of digitization in general and Industry 4.0 in particular.
- identify special features of digital business models and demonstrate them using the example of digital intermediaries.
- apply methods to uncover digitization potentials and use the Business Model Canvas to classify them in a business model.
- know and use models for the multi-perspective specification of services.
- know selected architectures for the design and integration of services.
- distinguish different technologies that are required for the development of services.
- define the quality of services by means of Service Level Agreements.

Contents

1. Introduction and Motivation
   - 1.1 Digitization and Cyber-Physical Production Systems
   - 1.2 Smart Services in Industry 4.0
   - 1.3 Examples of Smart Services
2. Digitization and Disruption
   - 2.1 Definition: Digital Business Models
   - 2.2 Strategies for Change and Innovation

- 2.3 Digital Intermediaries
- 2.4 Examples of Disruptive Business Models

3. Recognizing Potential for Smart Services
   - 3.1 Business Model Canvas
   - 3.2 Personas
   - 3.3 Customer Journeys
   - 3.4 Domain-Driven Design

4. Development and Specification of Smart Services
   - 4.1 Modelling of the System Context
   - 4.2 Modelling of Business Processes
   - 4.3 Modelling of Technical Interfaces
   - 4.4 Tools for API Specification

5. Service Architectures
   - 5.1 Infrastructure/Platform/Software-as-a-Service
   - 5.2 Everything-as-a-Service
   - 5.3 Service-oriented Architectures
   - 5.4 Micro Services

6. Integration Platforms
   - 6.1 Features and Purpose of Integration Platforms
   - 6.2 Enterprise Integration Patterns
   - 6.3 External Integration with Zapier, IFTTT & Others

7. Technologies for Smart Services
   - 7.1 Formats for Data Exchange
   - 7.2 Internet Communication Protocols
   - 7.3 Semantic Descriptions
   - 7.4 Complex Event Processing
   - 7.5 Security

8. Quality and Operation of Smart Services
   - 8.1 Quality Characteristics and Maturity of APIs
   - 8.2 Service Level Agreements
   - 8.3 Service Level Management

Literature
Compulsory Reading
Further Reading ▪ Chignell, M. et al. (Hrsg.) (2010): The Smart Internet. Current Research and Future Applications. Springer. ▪ Evans, E. (2003): Domain-Driven Design. Tackling Complexity in the Heart of Software. Addison-Wesley, Upper Saddle River. ▪ Hohpe, G./Woolf, B./Brown, K. (2012): Enterprise Integration Patterns. Designing, Building, and Deploying Messaging Solutions. 16th edition, Addison-Wesley. ▪ Nielsen, L. (2013): Personas – User Focused Design. Springer. ▪ Osterwalder, A/Pigneur, Y. (2010): Business Model Generation: A Handbook for Visionaries, Game Changers, John Wiley & Sons Inc.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Project: Smart Sevices

Module Code: DLBINGSS2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Holger Klus (Project: Smart Services)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Smart Services (DLBINGSS02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Written Assessment: Project Report Study Format: Distance Learning Written Assessment: Project Report	

Weight of Module

see curriculum

Module Contents

Analysis of a selected topic of Smart Services and design of a self-chosen assignment in a prototyping environment.

Learning Outcomes

Project: Smart Services

On successful completion, students will be able to

- have an in-depth understanding of the technologies and standards in the context of Smart Services.
- apply technologies in the context of smart services using a simple practical example.
- design a hardware or software prototype for a selected technical task.
- document design and development activities in the form of a project report.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Smart Services

Course Code: DLBINGSS02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, the students select a concrete technical task from the provided topic catalogue in consultation with the seminar leader. They work on the task with the help of a prototyping environment that is suitable for the subject of the task. The environments can be hardware (e.g. prototyping boards) or software (e.g. technology-specific development environments). To complete the task, students apply the concepts, methods and tools taught in the Smart Services I course. They document their results in a project report.

Course Outcomes

On successful completion, students will be able to

- have an in-depth understanding of the technologies and standards in the context of Smart Services.
- apply technologies in the context of smart services using a simple practical example.
- design a hardware or software prototype for a selected technical task.
- document design and development activities in the form of a project report.

Contents

- A catalogue with currently available assignments is provided on the online learning platform. It provides the content basis of the module and can be supplemented or updated by the tutor.

Literature

Compulsory Reading

Further Reading

- Lee, K.-H., & Kim, D. (2019). A peer-to-peer (P2P) platform business model: The case of Airbnb. Service Business: An International Journal, 13(4), 647-669.
- Maleshkova, M., Kühl, N., & Jussen, P. (2020). Smart service management: Design guidelines and best practices. Springer.
- Osterwalder, A., & Pigneur, Y. (2010). Business model generation: A handbook for visionaries, game changers, and challengers [Electronic resource]. Wiley.

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Slides	☑ Guideline
☑ Intensive Live Sessions/Learning Sprint		
☑ Recorded Live Sessions		

Project: Applied Robotics with Robotic Platforms

Module Code: DLBROPARRP_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Florian Simroth (Project: Applied Robotics with Robotic Platforms)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Applied Robotics with Robotic Platforms (DLBROPARRP01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Oral Project Report Study Format: Distance Learning Oral Project Report	

Weight of Module

see curriculum

Module Contents

This module provides students with the basic competence to use existing robotic software and hardware platforms to design, create and implement robots.

Learning Outcomes

Project: Applied Robotics with Robotic Platforms

On successful completion, students will be able to

- name several existing open-source robotic platforms.
- understand the basic principles of robotic platforms.
- work with existing robotic platforms.
- carry out a robotic project by means of robotic platforms.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Engineering	All Bachelor Programmes in the IT & Technology field

Project: Applied Robotics with Robotic Platforms

Course Code: DLBROPARRP01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In the last years several robotic software and hardware platforms have been developed. The existing diverse robotic systems provide an affordable and reliable basis to build next generation robots. Some of those systems are open source and constantly developed by the community of roboticists. Of course, such systems require a minimal understanding of robotics as well as of other robotics-related issues which are important in today's technical community, such as internet of things and communication interfaces. This course provides the basics to work with such robotic platforms for development, design and implementation of industrial and mobile robots.

Course Outcomes

On successful completion, students will be able to

- name several existing open-source robotic platforms.
- understand the basic principles of robotic platforms.
- work with existing robotic platforms.
- carry out a robotic project by means of robotic platforms.

Contents

- This course illustrates robotic platforms and their usage within robotics projects.

Literature

Compulsory Reading

Further Reading

- Cacace, J./Joseph, L. (2018): Mastering ROS for Robotics Programming: Design, build, and simulate complex robots using the Robot Operating System. 2nd ed., Packt Publishing, Birmingham.
- Koubaa, A. (ed.) (2018): Robot operating system (ROS): the complete reference. Volume 1. Springer, Cham.
- Quigley, M./Gerkey, B./Smart, W. D. (2015): Programming robots with ROS. O'Reilly, Sebastopol, CL.

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Digital and Information Technology

Module Code: DLBAETDIT_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Pazir Ahmad Ahmad (Digital and Information Technology)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Digital and Information Technology (DLBAETDIT01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Mathematical Foundations of Digital Logic
- Representation, Synthesis and Analysis of Boolean Functions
- Combinational Logic
- Sequential Logic
- Arithmetic Circuits
- Introduction to Programmable Logic

Learning Outcomes

Digital and Information Technology

On successful completion, students will be able to

- understand and apply the mathematical principles of digital logic.
- understand the different ways in which combinational logic and sequential logic work.
- analyze and evaluate digital arithmaticcircuits.
- understand the characteristics of programmable logic devices and develop simple arithmaticcircuits on them.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering.	All Bachelor Programs in the IT & Technology field.

Digital and Information Technology

Course Code: DLBAETDIT01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Digital and information technology is one of the basic subjects in electrical engineering and provides interdisciplinary basic knowledge for advanced courses. These basics are required in many courses and modules, including the realization of transistor circuits or the design of hardware-related embedded systems. Due to advances in technology, digital systems are becoming increasingly important and often replace traditional analog systems. Digital and information technology is thus a tool for the electrical engineer that should be mastered in order to gain access to more advanced know-how. This module therefore focuses not only on the theoretical fundamentals of digital and information technology (mathematical principles, combinational logic and sequential logic) but also on the practical realization of digital systems such as arithmaticcircuits in programmable logic devices.

Course Outcomes

On successful completion, students will be able to

- understand and apply the mathematical principles of digital logic.
- understand the different ways in which combinational logic and sequential logic work.
- analyze and evaluate digital arithmaticcircuits.
- understand the characteristics of programmable logic devices and develop simple arithmaticcircuits on them.

Contents

1. Mathematical Foundations of Digital Logic
   - 1.1 Boolean Functions and Algebra
   - 1.2 Number Systems (Dual, Octal, Decimal, Hexadecimal) and their Application
   - 1.3 Basic Arithmetic Operations in Number Systems (Addition, Subtraction, Multiplication, Division)
   - 1.4 Coding Methods (BCD, Gray, ASCII Code)
   - 1.5 Introduction to Modulation Techniques
2. Representation, Synthesis and Analysis of Boolean Functions
   - 2.1 Disjunctive and Conjunctive Normal Form
   - 2.2 Karnaugh-Veitch Map
   - 2.3 Quine-McCluskey Algorithm

3. Combinational Logic
   - 3.1 Logic Gate
   - 3.2 Connection of Logic Gaes
   - 3.3 Substitution by NOR / NAND Gates

4. Sequential Logic
   - 4.1 Latches and Flipflops
   - 4.2 Counter and Frequency Divider
   - 4.3 Shift Register and Memory

5. State Machines
   - 5.1 Foundations
   - 5.2 Models for State Machines
   - 5.3 Representation of State Machines
   - 5.4 Event-driven / Clock-driven State Machines
   - 5.5 Synchronization of Parallel State Machines

6. Arithmatic Circuits
   - 6.1 Adders
   - 6.2 Subtractor Circuits
   - 6.3 Multiplication Circuits

7. Introduction to Programmable Logic
   - 7.1 Programmable Cell Logic and Programmable Logic Array
   - 7.2 Complex Programmable Logic Devices (CPLD)
   - 7.3 FPGAs
   - 7.4 Introduction to VHDL

Literature

Compulsory Reading

Further Reading

- Mano, M.,/Ciletti, M. (2013): Digital Design. With an Introduction to the Verilog HDL. 5th edition, Pearson, London.
- Holdsworth, B./Woods, C. (2002): Digital Logic Design. 4th edition, Newnes, London.
- Gazi, O (2019): A Tutorial Introduction to VHDL Programming. 1st edition, Springer, Singapore.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Project: Microcontrollers and Logical Circuits

Module Code: DLBAETPMLS1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	DLBAETDIT01_E	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Kamran Mahmood (Project: Microcontrollers and Logical Circuits)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Microcontrollers and Logical Circuits (DLBAETPMLS01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Oral Project Report Study Format: Distance Learning Oral Project Report	

Weight of Module

see curriculum

Module Contents

The students should work independently through the complete flowof logic circuit design on the basis of a given problem. This includes the following steps: setting up a concept, module/component design, programming the modules, simulation and testing/implementation on a development board.

Learning Outcomes

Project: Microcontrollers and Logical Circuits

On successful completion, students will be able to

- link the theoretical knowledge acquired in previous courses and apply it to a practical problem.
- independently plan solutions for simple digital circuits.
- successfully apply industry-used logic circuit design tools or usemicrocontroller programming tools.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology field

Project: Microcontrollers and Logical Circuits

Course Code: DLBAETPMLS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	DLBAETDIT01_E

Course Description

The "Project: Microcontrollers and Logic Circuits" is intended to give students the opportunity to combine previously acquired knowledge of digital circuits with practical skills and to apply it to new problems. The handling of microcontrollers and logic circuits is a key qualification for many jobs in industry. In many electronic products with limited functionality, microcontrollers are used because of their special advantages. In edge computing, image processing, prototypes for communication networks and also for the realization of artificial intelligence, logic circuits are often used, either to provide a fast result or to meet special requirements. The "Project: Microcontroller and Logic Circuits" gives students the chance to develop their own microcontroller application or logic circuit.

Course Outcomes

On successful completion, students will be able to

- link the theoretical knowledge acquired in previous courses and apply it to a practical problem.
- independently plan solutions for simple digital circuits.
- successfully apply industry-used logic circuit design tools or usemicrocontroller programming tools.

Contents

- In the "Project: Microcontroller and Logic Circuits" the students have to work through the programming of an application on a microcontroller or the complete flowof the design of logic circuits independently on the basis of a given problem. The students will be given a catalog of possible problems. It is up to the students whether they solve the problem by a microcontroller application or by a logic circuit.
- The problems are supposed to be simple tasks as they are often encountered in industry, for example the reading of a sensor and conditional switching of an output, if a certain temperature, acceleration or light intensity is measured. Alternatively, interested students should also have the opportunity to contribute their own problems. In solving the problems, the students combine what they have learned in previous lectures with practical skills that they will acquire while working on the project. In addition tools will be applied that are also used in industry when working on the project.
- By the end of the project, students will have independently developed their own microcontrollerapplication or a separate logic circuit will be implemented.

- If the students decide to solve their project with a microcontroller application, the steps to be carried out as well as the report to be submitted should include the following points:
  - Developing a concept for solving the problem: Based on theproblem, students should develop a concept and document how the problem can be solved with a microcontroller.
  - Familiarization with the programming of microcontrollers: Based on their knowledge ofthe Python programming language, students will learn how to program microcontrollers using C++ and document their progress.
  - Transfer the concept into functional blocks and functions: Students decomposetheir concept into individual functional blocks and functions. They describe the interfaces between the blocks and the flow of the functions.
  - Implementing the code: Students program all functions. The procedure is documented and discussed.
  - Testing of the project on the target hardware (e.g. MikroElektronika MIKROE-483) and creation of the project documentation: Finally, the functionality of the solution is verifiedon a development board.
- Should students decide to solve their project with a logic circuit,then the steps to be taken, as well as the report to be submitted, should include the following points:
  - Developing a concept for solving the problem: Based on the problem, students should develop a concept and document how the problem can be solved with a logic circuit.
  - Translating the concept into a logical circuit at module/component level:
    The students break down their concept into individual components and describe the interfaces between the components, as well as the functional flow within the components.
  - Programming the modules: The previously specified components are programmed by the students in VHDL.
  - Simulation of the logic circuit: Testbenches are created for the individual components, as well as for the overall system, and their function is simulated. The results are documented and discussed.
  - Testing the project on the target hardware (e.g. Seeed Spartan Edge Accelerator Board - Arduino FPGA Shield) and creating the project documentation: Finally, the functionality of the solution is verified on a development board.
- Ideally, the students will work off, within the framework of the "Project: Microcontroller and logical circuits", all the points mentioned above for a solution path of their choice.

Literature
Compulsory Reading
Further Reading ▪ Parab, J./Shelake, V./Kamat, R./Naik, G. (2007): Exploring C for Microcontrollers: A Hands on Approach. 1st edition, Springer Netherlands, Dordrecht ▪ LaMeres, B. J. (2016): Introduction to Logic Circuits & Logic Design with VHDL. Springer International Publishing, Basel. ▪ LaMeres, B. J. (2019): Quick Start Guide to VHDL. Springer International Publishing, Basel.

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Soft Robotics

Module Code: DLBROESR2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Florian Simroth (Soft Robotics)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Soft Robotics (DLBROESR02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Written Assignment	

Weight of Module

see curriculum

Module Contents

- Soft Robotics
- Actuators for Soft Robots
- Sensors for Soft Robots
- Applications of Soft Robots

Learning Outcomes **Soft Robotics** On successful completion, students will be able to ▪ know the basics behind soft robots. ▪ understand and analyze common structures of soft robots. ▪ choose the best soft robot technology for a given application.	
Links to other Modules within the Study Program This module is similar to other modules in the field of Engineering	**Links to other Study Programs of the University** All Bachelor Programmes in the IT & Technology field

Soft Robotics

Course Code: DLBROESR02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Classic robots are made of rigid links and structures. In the last years, the field of robotics has been strongly influenced and inspired by biological processes. Instead of rigid structures, soft structures, materials, and surfaces are characterizing innovative, soft robots. This new generation of robots can be used in several applications where highly dynamic tasks must be performed in unsafe or rough environments, and especially where the interaction with humans is necessary. This course provides the basics in the fast-changing field of soft robotics, starting with an overview of materials and technologies for soft actuators, proceeding with an overview on innovative sensors, and concluding with an overview on modeling approaches for soft robots. The last part summarizes some relevant state-of-the-art applications.

Course Outcomes

On successful completion, students will be able to

- know the basics behind soft robots.
- understand and analyze common structures of soft robots.
- choose the best soft robot technology for a given application.

Contents

1. Introduction
   - 1.1 Soft Robots
   - 1.2 Challenges
   - 1.3 Trends
   - 1.4 Applications

2. Actuators
   - 2.1 Soft Actuators and Their Classification
   - 2.2 Materials and Properties of Soft Actuators
   - 2.3 Thermo-Driven Soft Actuators
   - 2.4 Electro-Driven Soft Actuators
   - 2.5 Light-Driven Soft Actuators
   - 2.6 Magneto-Driven Soft Actuators
   - 2.7 Pneumatic Soft Actuators

3. Sensors
   - 3.1 Basics
   - 3.2 Types of Sensors (With Examples)
   - 3.3 Sensing Technologies

4. Modeling and Control
   - 4.1 Basics
   - 4.2 Modeling of Soft Robots (With Examples)
   - 4.3 Control of Soft Robots (With Examples)

5. Concluding Remarks
   - 5.1 Applications
   - 5.2 Challenges and Opportunities
   - 5.3 Useful Research and Projects on Soft Robotics

Literature

Compulsory Reading

Further Reading

- Asaka, K./Okuzaki, H. (eds.) (2019): Soft actuators: materials, modeling, applications, and future perspectives. Springer, Singapore.
- Kim, J. (2017): Microscale Soft Robotics. Springer International Publishing, Cham.
- Siciliano, B./Khatib, O. (eds.) (2016): Springer Handbook of Robotics. Springer International Publishing, Cham.
- Verl, A., et al (eds.) (2015): Soft Robotics: Transferring Theory to Application. Soft Robotics. Springer, Berlin.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
	☑ Audio	
	☑ Slides	

E-Commerce I

Module Code: DLBECEC1-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Vera Schenkenberger (E-Commerce I)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- E-Commerce I (BWEC01-02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Overview
- Players and market forms of e-commerce
- Revenue concepts in e-commerce
- Operation types and business models in e-commerce
- Legal Framework Conditions of e-commerce
- Strategies in e-commerce

Learning Outcomes

E-Commerce I

On successful completion, students will be able to

- understand electronic sales as a component of corporate strategy.
- understand the types of business and business models.
- outline the development of online markets.
- analyze legal and economic framework conditions.
- outline the main features of electronic commerce and make initial strategic decisions.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of E-Commerce	All Bachelor Programs in the Marketing & Communication field

E-Commerce I

Course Code: BWEC01-02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

This course uses the basics of business and economic principles to give students an initial introduction to the topic of e-commerce. First of all, actors and market forms are explained and possible business relationships are explained. Furthermore, possible operation types and business models in e-commerce are presented and explained in detail. In addition, the legal and economic framework conditions surrounding online retail are described. In summary, the course teaches basic technical terms and concepts from electronic commerce and deals with different strategies in e-commerce.

Course Outcomes

On successful completion, students will be able to

- understand electronic sales as a component of corporate strategy.
- understand the types of business and business models.
- outline the development of online markets.
- analyze legal and economic framework conditions.
- outline the main features of electronic commerce and make initial strategic decisions.

Contents

1. Overview
   - 1.1 Classification and Definitions
   - 1.2 Digital Transformation and Disruption
   - 1.3 Economic Importance for Trade
2. Actors and Market Forms in E-Commerce
   - 2.1 Market Participants and Business Relationships
   - 2.2 Online Shops
   - 2.3 Online Marketplaces
3. Revenues in E-Commerce
   - 3.1 Business Plan and Proof of Concept
   - 3.2 Revenue Models
4. Operation Types and Business Models in E-Commerce

4.1 Typologies of Operations
4.2 Business Model Diversity
4.3 Integration with Traditional Retail

5. Legal Framework Conditions of E-Commerce
5.1 Legal Regulations on Distance Selling
5.2 Data Protection
5.3 Intellectual Property
5.4 Imprint Obligation and Dispute Resolution

6. Strategies in E-Commerce
6.1 Strategies for Market Positioning
6.2 Strategies for Market Development and Market Penetration
6.3 Strategies for Market Expansion

Literature

Compulsory Reading

Further Reading

- Chaffey, D., Hemphill, T. & Edmundson-Bird, D. (2019), Digital Business and E-Commerce Management-Strategy, Implementation and Practice (7th edition) Pearson UK.
- Hanlon, A. (2022) Digital Marketing: Strategic Planning & Integration. SAGE Publications
- Hanlon, A. (2024) Digital Business: Strategy, Management & Transformation. SAGE Publications.
- Laudon, K. C., & Traver, C. G. (2023). E-Commerce 2023-2024: Business, Technology and Society (18th edition, Global Edition). Pearson.

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

E-Commerce II

Module Code: DLBECEC2-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none		5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (E-Commerce II)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- E-Commerce II (BWEC02-02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Behavior of Online Customers
- Elements of the Digital Marketing Mix
- Social Media Marketing in E-Commerce
- E-CRM, Online PR, and E-Recruiting
- Payment in E-Commerce
- Controlling in E-Commerce

Learning Outcomes

E-Commerce II

On successful completion, students will be able to

- understand variable product assembly and pricing.
- explain electronic communication platforms and models (including online advertising).
- predict and influence the behavior of online customers.
- elaborate on e-commerce in depth and operationalize strategic marketing objectives digitally.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of E-Commerce	All Bachelor Programs in the Marketing & Communication field

E-Commerce II

Course Code: BWEC02-02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
	English		5	none

Course Description

This course expands the understanding of e-commerce with elements of online customer behavior, as well as strategic and operational marketing. Based on the understanding of online customers' behavior, marketing tools are explained and their relevance in e-commerce is presented. The course program is also supplemented by knowledge about the system landscape and the technical infrastructure for e-commerce. Additionally, applications of artificial intelligence, CRM, and online PR in e-commerce are analyzed. Furthermore, payment transactions and controlling online trade are presented in a practical manner. In summary, the course conveys practical concepts from online trade and supplements the introductory course with basic knowledge about e-commerce.

Course Outcomes

On successful completion, students will be able to

- understand variable product assembly and pricing.
- explain electronic communication platforms and models (including online advertising).
- predict and influence the behavior of online customers.
- elaborate on e-commerce in depth and operationalize strategic marketing objectives digitally.

Contents

1. Purchasing Process of Online Customers
   - 1.1 Buying Behavior
   - 1.2 Purchase Decision Process
   - 1.3 Customer Journey and Touchpoints
2. Online Marketing in E-Commerce
   - 2.1 Fundamentals of Online Marketing
   - 2.2 Channels of Online Marketing
   - 2.3 Marketing on Online Marketplaces
3. System Landscape and Technical Infrastructure
   - 3.1 Basics and Definitions
   - 3.2 E-Commerce System Landscape

3.3 Shop Systems
3.4 Technical Infrastructure

4. AI, CRM, and Online PR in E-Commerce
   4.1 Artificial Intelligence (AI)
   4.2 CRM
   4.3 Online PR

5. Payment Transactions in E-Commerce
   5.1 Basics and Terms
   5.2 Traditional Payment Methods
   5.3 Credit Card
   5.4 E-Payment and M-Payment Methods
   5.5 Other Methods

6. Controlling in E-Commerce
   6.1 Success Metrics
   6.2 Visitor Metrics
   6.3 Customer Metrics
   6.4 Performance Measurement and Systems

Literature

Compulsory Reading

Further Reading

- Ahrholdt, D., Greve G., & Hopf G. (2023). Social Media Marketing. Springer Books, 347.
- Dave C., & Smith, P.R. (2023). Digital Marketing Excellence : Planning, Optimizing and Integrating Online Marketing: Vol. Sixth edition. Routledge.
- Radu, C.-G., Dima, A. M., & Vargas, V. M. (2023). Online Shopping and Consumer Behaviour. Sciendo.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions		

International Marketing

Module Code: DLBDSEIMB1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Josephine Zhou-Brock (International Marketing)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ International Marketing (DLBDSEIMB01)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes Study Format: Duales myStudium Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- International marketing strategy
- Cultural differences and their significance for marketing
- International marketing mix (product, price, promotion, and distribution decisions in an international environment)
- International market research and consumer behavior
- Ethical aspects in international marketing
- International marketing controlling and six sigma

Learning Outcomes

International Marketing

On successful completion, students will be able to

- understand basic aspects of international strategic marketing.
- analyze cultural differences and their impact on international marketing.
- apply selected concepts of the international marketing mix.
- describe the possibilities of international market research and its influence on consumer behavior.
- recognize the necessity of international brand controlling and quality management.
- reproduce theoretical knowledge using case studies.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Marketing & Sales	All Bachelor Programs in the Marketing & Communication field

International Marketing

Course Code: DLBDSEIMB01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Students are taught the necessity for strategic marketing in an international context. They will learn about essential cultural differences and their influences on international marketing management. The basic decisions, standardizations, and adaptations in international marketing are experienced by the students on the basis of different concepts in the international marketing mix. The necessity of international market research, strategic planning, and control are taught to the students, along with the ethical aspects in international marketing. The students analyze current topics in international marketing management and reflect on them in connection with the concepts they have learned in this course.

Course Outcomes

On successful completion, students will be able to

- understand basic aspects of international strategic marketing.
- analyze cultural differences and their impact on international marketing.
- apply selected concepts of the international marketing mix.
- describe the possibilities of international market research and its influence on consumer behavior.
- recognize the necessity of international brand controlling and quality management.
- reproduce theoretical knowledge using case studies.

Contents

1. Strategic International Marketing
   - 1.1 Internationalization
   - 1.2 Theoretical Foundations of International Market Entry Strategies
   - 1.3 Forms of International Market Entry
2. Cultural Differences as an Aspect of International Marketing
   - 2.1 Overview of Culture
   - 2.2 Cultural Model Based on Hofstede
   - 2.3 Cultural Model Based on Trompenaars
3. Case Studies in International Market Entry and Marketing Strategies
   - 3.1 Case Study: Nivea in South Korea

Literature
Compulsory Reading
Further Reading ▪ Armstrong, G., Kotler, P., & Opresnik, M. O. (2019). Marketing: An introduction (14th ed.). Pearson. ▪ Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). Cultures and organizations—Software of the mind: Intercultural cooperation and its importance for survival. McGraw-Hill. ▪ Hollensen, S. (2020). Global marketing (8th ed.). Pearson.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Practice Exam
- ☑ Online Tests

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

International Brand Management

Module Code: DLBDSEIMB2

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Josephine Zhou-Brock (International Brand Management)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ International Brand Management (DLBDSEIMB02)

Module Exam Type	
Module Exam Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Basics of brand management
- Framework conditions for brands in international markets
- Strategies and concepts of international brands
- Brand architectures and brand extension options
- Brand management and communication
- Brand management according to the stakeholder concept
- Brand control and protection

Learning Outcomes

International Brand Management

On successful completion, students will be able to

- recognize the significance of a brand and the general conditions under which brands operate, as well as the associated tasks of brand management.
- describe the components of a brand and its management.
- explain the positioning of brands on regional, national and international markets.
- understand the role of brand evaluation and compare the most common measurement techniques.
- give an overview of the importance of trademark protection and suggest strategies for preventing counterfeiting.
- conceive of brand strategies and measures for the avoidance or occurrence of brand crises.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the fields of Marketing & Sales	All Bachelor Programmes in the Marketing & Communication fields

International Brand Management

Course Code: DLBDSEIMB02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The aim of this course is to deepen and expand the knowledge acquired in the introductory elective course International Marketing. The value of a brand is a decisive competitive advantage for companies in international business. Brands create long-term and profitable customer relationships. Brands are therefore valuable assets for companies and organizations. Students learn the basics of brand management before moving on to the concepts and success factors of international brand management. Students also become familiar with the structure of brand architectures and the possibilities of brand extensions. The fact that different stakeholder groups must be taken into account in brand management is communicated to the students on the basis of the stakeholder concept. In addition, the students get to know the various methods for measuring brand value and brand controlling. The aspects of trademark protection that are particularly important in an international environment will be dealt with conclusively.

Course Outcomes

On successful completion, students will be able to

- recognize the significance of a brand and the general conditions under which brands operate, as well as the associated tasks of brand management.
- describe the components of a brand and its management.
- explain the positioning of brands on regional, national and international markets.
- understand the role of brand evaluation and compare the most common measurement techniques.
- give an overview of the importance of trademark protection and suggest strategies for preventing counterfeiting.
- conceive of brand strategies and measures for the avoidance or occurrence of brand crises.

Contents

1. Basics of Brand Management
   - 1.1 Brand Significance and Brand Understanding
   - 1.2 Market Conditions
   - 1.3 Tasks and Goals of Brand Management
2. Brand Identity, Brand Positioning, and Brand Personality
   - 2.1 Brand Identity as the Basis of Brand Management

10. Trademark Protection
    - 10.1 Object of Trademark Protection
    - 10.2 Origin of Trademark Protection
    - 10.3 Trademark Infringements

Literature

Compulsory Reading

Further Reading

- Beverland, M. (2021). Brand management: Co-creating meaningful brands (2nd ed.). SagePublications Ltd.
- Burmann, C., Riley, N. M., Halaszovich, T., & Schade, M. (2017). Identity-based brand management:Fundamentals—strategy—implementation—controlling. Springer Gabler.
- Kapferer, J. N. (2012). The new strategic brand management: Advanced insights and strategicthinking (5th ed.). Kogan Page.
- Keller, K. L., & Swaminathan, V. (2019). Strategic brand management: Building, measuring, andmanaging brand equity (5th ed., Global ed.). Pearson.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

International Management

Module Code: BWINT1-02

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Jonathan Black-Branch (International Management)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ International Management (BWINT01)

Module Exam Type	
Module Exam Study Format: Duales myStudium Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes Study Format: On Campus Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Globalization and the Internationalization of Business
- Assessment of Political, Legal, Economic, and Cultural Contexts
- Strategy in International Business
- Organization in International Business
- Marketing in International Business
- Human Resource Management in International Business

Learning Outcomes

International Management

On successful completion, students will be able to

- recognize and explain the cultural, social, economic, historical, and political differences that affect strategic decision making on an international/global scale.
- gather specific information and conduct reliable assessments of the opportunities and risks related to business activities in different geographical market regions and specific national markets.
- describe the impact of culture on international business activities.
- identify different options for market entry and market development and participate in strategic planning activities that address these issues.
- design and evaluate different organizational structures for international businesses and design measures to optimize organizational structures for international operations.
- design, evaluate, and optimize human resource management practices for global and multinational companies.
- explain options for international marketing and select an appropriate marketing mix relative to specific products/services and the target market.
- identify and manage challenges associated with operating in an international/global business environment, such as the procurement and coordination of resources and human resource management.
- develop business plans that implement specific organizational, marketing, and distribution strategies in selected regions/countries.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programs in the Business & Management field

International Management

Course Code: BWINT01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Globalization presents multiple opportunities and challenges to product and service industries. Many companies previously engaged in local markets must consider global trends and international markets, both on the demand and on the supply side. With this, comes new opportunities to market products and services. At the same time, complexity in daily business increases and managers have to face ambiguities and frequently changing contexts. With more competition, more diverse markets, and cultural, political, and legal challenges abroad, it has become more difficult to manage a company efficiently. All these factors call for managers to adopt a global mindset and sufficient cultural sensitivity.The course is designed to cover the economic, organizational, and cultural underpinnings that students need to grasp in order to better understand the managerial challenges that global organizations of all types and sizes have to cope with. Participants of this course will be provided with empirical knowledge and first-hand experiences of international management. Through multiple case studies within the course book, online lectures, and tutorials, students will develop a detailed understanding of the strategies and operational patterns necessary to successfully operate in international markets.

Course Outcomes

On successful completion, students will be able to

- recognize and explain the cultural, social, economic, historical, and political differences that affect strategic decision making on an international/global scale.
- gather specific information and conduct reliable assessments of the opportunities and risks related to business activities in different geographical market regions and specific national markets.
- describe the impact of culture on international business activities.
- identify different options for market entry and market development and participate in strategic planning activities that address these issues.
- design and evaluate different organizational structures for international businesses and design measures to optimize organizational structures for international operations.
- design, evaluate, and optimize human resource management practices for global and multinational companies.
- explain options for international marketing and select an appropriate marketing mix relative to specific products/services and the target market.
- identify and manage challenges associated with operating in an international/global business environment, such as the procurement and coordination of resources and human resource management.
- develop business plans that implement specific organizational, marketing, and distribution strategies in selected regions/countries.

Contents

1. Introduction to International Management
   - 1.1 What is Globalization?
   - 1.2 Facts about Globalization and the Global Economy
   - 1.3 Theoretical Explanations for Globalization
2. The International Company and its Environment
   - 2.1 International Companies and their Operations
   - 2.2 Operational Patterns in International Markets
   - 2.3 Assessment of the Environment for Internalization
3. Culture and International Business
   - 3.1 A Generic Perspective on Culture
   - 3.2 Organizational Culture
   - 3.3 Cultural Diversity and the Contemporary Manager
4. Strategy Development in International Business
   - 4.1 Strategy in Globalized Business Operations
   - 4.2 Strategy Concepts and Strategic Options

4.3 Managing Strategy

5. International Human Resource Management
   - 5.1 Characteristics of International Human Resource Management
   - 5.2 The Global Manager
   - 5.3 Instruments in International Human Resource Management

6. Organization in International Business
   - 6.1 Traditional Perspectives on Business Organization
   - 6.2 Modern Views on Business Organization
   - 6.3 Coordination of Intra-Organization Collaboration

7. International Marketing
   - 7.1 Marketing in International Business
   - 7.2 Strategic Choices in International Marketing
   - 7.3 Marketing Mix Choices in International Marketing

Literature

Compulsory Reading

Further Reading

- Deresky, H. (2016). International management (9th ed.). Harlow: Prentice Hall International
- Collinson, C., Narula, R., and Rugma, Alan.M. (2020). International Business, 8th edition Pearson.
- Peng, M. W., & Meyer, K. (2023). International business. (4th ed.) London: Cengage Learning Emea.
- Daniels, J. D., Radebaugh, L. H., & Sullivan, D. P. (2019). International business: Environments and Operations (16th ed.). Harlow: Pearson.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format On Campus

Study Format	Course Type
On Campus	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Purchasing, Procurement and Distribution

Module Code: DLBBWEBD_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Vera Schenkenberger (Purchasing, Procurement and Distribution)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Purchasing, Procurement and Distribution (DLBLOISCM102_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Purchasing and procurement
- Basics of distribution
- Distribution of industrial goods
- Trends and digitalization in procurement and distribution

Learning Outcomes

Purchasing, Procurement and Distribution

On successful completion, students will be able to

- understand the importance of procurement in achieving superordinate corporate objectives.
- describe the major processes of procurement, classify and apply strategies and concepts of procurement.
- identify supply management processes and methods.
- describe fields of application and types of information and communication systems to support procurement processes.
- know tasks, objectives, functions and carriers of distribution.
- understand design approaches of distribution logistics systems and classify them with regard to different distribution strategies.
- know special features of the distribution of industrial goods in contrast to other groups of goods and describe different types of industrial goods marketing.
- differentiate forms of electronic marketplaces in procurement and distribution.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the fields of Transportation & Logistics	All Bachelor Programs in the Transport & Logistics fields

Purchasing, Procurement and Distribution

Course Code: DLBLOISCM102_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Students learn basic processes and strategies in the procurement and distribution of industrial companies. Various management systems such as supply management and their significance for achieving the procurement and distribution-specific corporate goals are explained in more detail. A specific focus is given on the distribution of industrial goods and characteristics of industrial goods marketing. In addition, the fields of application and potentials of information and communication systems in procurement and distribution processes are discussed and various types of relevant systems are presented.

Course Outcomes

On successful completion, students will be able to

- understand the importance of procurement in achieving superordinate corporate objectives.
- describe the major processes of procurement, classify and apply strategies and concepts of procurement.
- identify supply management processes and methods.
- describe fields of application and types of information and communication systems to support procurement processes.
- know tasks, objectives, functions and carriers of distribution.
- understand design approaches of distribution logistics systems and classify them with regard to different distribution strategies.
- know special features of the distribution of industrial goods in contrast to other groups of goods and describe different types of industrial goods marketing.
- differentiate forms of electronic marketplaces in procurement and distribution.

Contents

1. Purchasing and Procurement
    - 1.1 Definition of "Procurement" and "Procurement Process”
    - 1.2 Make-or-Buy Decisions
    - 1.3 In- and Outsourcing Strategies
    - 1.4 Procurement Concepts and Strategies
    - 1.5 Market Research in procurement
    - 1.6 Supply Management
    - 1.7 Information and Communication Systems in Purchasing and Procurement

1.8 Organizational Concepts in Procurement

2. Basics of Distribution
   - 2.1 Functions of Distribution
   - 2.2 Operational Distribution Agencies and Intermediaries
   - 2.3 Distribution Logistics
   - 2.4 Distribution Structures
   - 2.5 Distribution Strategies
   - 2.6 Operational Distribution Management

3. Distribution of Industrial Goods
   - 3.1 Industrial Goods Marketing
   - 3.2 Product Business
   - 3.3 Asset Business
   - 3.4 Systems Business
   - 3.5 Supplier Business

4. Trends and Digitalization in Procurement and Distribution
   - 4.1 Electronic Marketplaces
   - 4.2 Supplier Cooperation: Supplier Relationship Management (SRM)

Literature

Compulsory Reading

Further Reading

- Bowersox, D., Closs, D., & Cooper, M. B. (2020). Supply chain logistics management (5th ed.). McGraw Hill.
- Christopher, M. (2016). Logistics and supply chain management (5th ed.). Pearson.
- Helmold, M., & Terry, B. (2021). Operations and supply management 4.0: Industry insights, case studies and best practices. Springer International Publishing.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
	☑ Audio	
	☑ Slides	

Data Analytics and Big Data

Module Code: DLBINGDABD_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Jan Rüterbories (Data Analytics and Big Data)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Data Analytics and Big Data (DLBINGDABD01_E)

Module Exam Type	
Module Exam Study Format: myStudies Written Assessment: Case Study Study Format: Distance Learning Written Assessment: Case Study	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Introduction to Data Analysis
- Statistical Basics
- Data Mining
- Big Data Methods and Technologies
- Legal Aspects of Data Analysis
- Solution Scenarios
- Application of Big Data in the Industry

Learning Outcomes

Data Analytics and Big Data

On successful completion, students will be able to

- distinguish between information and data and know the meaning of these terms for decision-making.
- derive the Big Data issue, especially in connection with Internet of Things, and describe it using examples.
- identify basics from statistics, which are necessary for the analysis of large data sets.
- identify the process of data mining and classify different methods in it.
- identify selected methods and technologies that are used in the Big Data context and apply them to simple examples.
- recognize the legal framework for the application of data analysis in Germany and internationally.
- identify the specific prospects and challenges of applying Big Data analyses in industry.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Data Science & Artificial Intelligence	All Bachelor Programs in the IT & Technology field

Data Analytics and Big Data

Course Code: DLBINGDABD01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The aim of the course is to familiarize students with selected methods and techniques of data analysis in the context of continuously increasing, heterogeneous data sets. To this end, the fundamental relevance of Big Data methods is presented by drawing on the historical development of stored data. One decisive factor here is the continuous transmission Internet of Things sensor data to other systems. This is followed by a short introduction to the essential statistical fundamentals before the individual steps of the data mining process are discussed. In distinction to these classical procedures, selected methods are presented with which stored data in the Big Data context can be made analyzable. As data analysis is subject to certain legal frameworks, this course also covers legal aspects such as data protection. The course concludes with an overview of the practical application of Big Data methods and tools. In particular, fields of application in the industrial context are examined.

Course Outcomes

On successful completion, students will be able to

- distinguish between information and data and know the meaning of these terms for decision-making.
- derive the Big Data issue, especially in connection with Internet of Things, and describe it using examples.
- identify basics from statistics, which are necessary for the analysis of large data sets.
- identify the process of data mining and classify different methods in it.
- identify selected methods and technologies that are used in the Big Data context and apply them to simple examples.
- recognize the legal framework for the application of data analysis in Germany and internationally.
- identify the specific prospects and challenges of applying Big Data analyses in industry.

Contents

1. Introduction to Data Analysis
    - 1.1 Decisions, Information, Data
    - 1.2 Historical Development of Data Storage and Evaluation
    - 1.3 Big Data: Features and Examples
    - 1.4 Data Analysis

Literature
Compulsory Reading
Further Reading ▪ Akerkar, R., & Srinivas Sajja, P. (2016). Intelligent Techniques for Data Science. Springer. ▪ Curry, E., Auer, S., Berre, A., J., Metzger, A., Perez, M., S., & Zillner, S. (2022). Technologies and Applications for big data value. Springer. Pages 1–15 & 321–344. ▪ Hoeren, T., & Kolany-Raiser, B., (Eds.). (2018). Big data in context – Legal, social and technological insights. Springer Nature. ▪ Illowsky, B., & Dean, S. (2018). Introductory statistics. OpenStax CNX. Chapters 2 & 8. ▪ Jurafsky, D., & Martin, J. H. (2013). Speech and language processing: an introduction to natural language processing, computational linguistics, and speech recognition (2. ed.). Pearson Prentice Hall.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support	Learning Material	Exam Preparation
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

International Contract Management

Module Code: DLBINTIWR_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Georg Berkel (International Contract Management)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- International Contract Management (DLBINTIWR01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- The Four Phases of Contract Management
- Phase I: Offer Preparation
- Phase II: Negotiation
- Phase III: Implementation
- Phase IV: Analysis

Learning Outcomes

International Contract Management

On successful completion, students will be able to

- identify and explain the four phases of contract management.
- describe essential elements of an international treaty.
- explain which contractual clauses are fundamental to the business model.
- understand which and how contractual risks can be quantified.
- distinguish how to negotiate different contractual clauses.
- show how revenue can be increased in the offer phase and processing phase.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Law	All Bachelor Programs in the Management field

International Contract Management

Course Code: DLBINTIWR01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The internationalization of economic life has progressed steadily in recent decades. While business considerations often change little when borders are crossed, legal issues show quite a different pattern. After all, every country has its own legal system. By law, the rights and duties of those involved in economic life in different countries can vary or even contradict each other. However, the laws of the individual legal systems are primarily created for domestic situations. Also, questions arising in international economic transactions are largely answered by the individual states themselves, again quite independently and in their individual way. Often, only specialists in private international law are able to evaluate which rights and obligations apply by law. However, the acquisition of such special knowledge is neither practicable nor necessary for daily business practice. This course focuses on the subject area of contract management. Instead of submitting to an unclear legal situation, companies - even across national borders - can often determine their own binding rights and obligations. The means to achieve this is the contract. A contract is nothing more than the mutual promise of the parties to do something for each other. The questions to be answered follow the business logic of the transaction. If, for example, goods or services are purchased by payment, the parties must agree, for example, on when and where the goods are to be delivered, in which currency payment is to be made, and what is to be done in the event of a defect. Efficient contract management is therefore crucial for the success of the company, especially in an international context. In this course, its objectives, contents and methods will be presented. This course follows the chronological sequence of a project and identifies the four phases of contract management: proposal preparation, negotiation, execution and analysis. In each phase, contract management must face specific challenges. When preparing an offer, it is particularly important to transfer the business model into a contractually meaningful form. During negotiations, the practicability and profitability of the business model must be maintained. In the execution phase, the main focus is on securing and increasing results. Finally, the analysis enables "lessons learned" to be drawn for future business activities.

Course Outcomes

On successful completion, students will be able to

- identify and explain the four phases of contract management.
- describe essential elements of an international treaty.
- explain which contractual clauses are fundamental to the business model.
- understand which and how contractual risks can be quantified.
- distinguish how to negotiate different contractual clauses.
- show how revenue can be increased in the offer phase and processing phase.

Contents

Literature
Compulsory Reading
Further Reading ▪ Berkel, G. (2016). Contractmanagement.In M. Kleinaltenkamp, W. Plinke, & I. Geiger (Eds.), Business project management and marketing: Mastering business markets (pp. 159—206). Springer. ▪ Brett, J. M. (2014). Negotiating globally: How to negotiate deals, resolve disputes, and make decisions across cultural boundaries(3rd ed.). Jossey-Bass. ▪ Brunet, A., & Cesar, F. (2021). Contract management: Contractual performance, renegotiation, and claims: How to safeguard and increaseprofit margins. Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Project: Design Thinking

Module Code: DLBINGDT_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Inga Schlömer (Project: Design Thinking)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: Design Thinking (DLBINGDT01_E)

Module Exam Type	
Module Exam Study Format: Distance Learning Written Assessment: Project Report Study Format: myStudies Written Assessment: Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Basic principles of Design Thinking
- The Design Thinking micro process
- The Design Thinking macro process
- Methods for early phases of the process
- Methods for idea generation
- Methods for prototyping and testing
- Space concepts for Design Thinking
- Examples and case studies

Learning Outcomes

Project: Design Thinking

On successful completion, students will be able to

- know the mindset of Design Thinking.
- know the individual phases of the incremental micro cycle and carry them out on an example project.
- know the individual stages of prototyping and apply them in an example project.
- know and use methods and tools for the individual steps of the micro cycle.
- know different space concepts for Design Thinking work environments.
- know examples for the application of Design Thinking by means of business case studies.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Design	All Bachelor Programs in the Design, Architecture & Construction field

Project: Design Thinking

Course Code: DLBINGDT01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course students will receive a practical introduction to Design Thinking. In addition to teaching the individual basic principles, the procedures in Design Thinking will also be examined in detail. In order not only to understand Design Thinking but also to experience it, selected methods for the individual process steps will be presented and practiced on an example project.

Course Outcomes

On successful completion, students will be able to

- know the mindset of Design Thinking.
- know the individual phases of the incremental micro cycle and carry them out on an example project.
- know the individual stages of prototyping and apply them in an example project.
- know and use methods and tools for the individual steps of the micro cycle.
- know different space concepts for Design Thinking work environments.
- know examples for the application of Design Thinking by means of business case studies.

Contents

1. Basic Principles of Design Thinking
2. The Design Thinking Micro Process
3. The Design Thinking Macro Process
4. Methods for Early Phases of the Process
5. Methods for Idea Generation
6. Methods for Prototyping and Testing
7. Examples and Case Studies

Literature
Compulsory Reading
Further Reading ▪ Brown, T. (2008). Design Thinking. Harvard Business Review, June, 84–95. ▪ Brown, T., & Kātz, B. (2019). Change by design: How design thinking transforms organizations and inspires innovation (Revised and updated edition). Harper Business. ▪ IDEO. (2015). The field guide to human-centered design: Design kit (1st ed.). IDEO. ▪ Lewrick, M., Patrick, L., & Leifer, L. (2018). The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems. John Wiley & Sons. ▪ Lewrick, M., Patrick, L., & Leifer, L. (2020). Design Thinking Toolbook. John Wiley & Sons.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Certificate Course Italian

Module Code: DLFSWI1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Enno Nagel (Certificate Course Italian)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Certificate Course Italian (DLFSWI01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Participation Certificate (passed / not passed) Study Format: Distance Learning Participation Certificate (passed / not passed)	

Weight of Module

see curriculum

Module Contents

To learn and deepen Italian as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Certificate Course Italian

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Italian according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Certificate Course Italian

Course Code: DLFSWI01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of Italian as a foreign language is taught and practiced according to a CEFR placement test. Upon successful completion, students will receive a certificate corresponding to their chosen level.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Italian according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply

and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)
    - to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)
- Grammar:
    - Level A1 - present and past tenses, sentence structure, prepositions, etc.
    - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
    - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
    - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading - According to the Information given in the Online Course speexx

Study Format myStudies

Study Format	Course Type
myStudies	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Foreign Language Italian

Module Code: DLFSI_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Regina Cordes (Foreign Language Italian)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Foreign Language Italian (DLFSI01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

To learn and deepen Italian as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Foreign Language Italian

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Italian according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Foreign Language Italian

Course Code: DLFSI01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of Italian as a foreign language is taught and practiced according to a CEFR placement test.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Italian according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)

- to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)

- Grammar:
  - Level A1 - present and past tenses, sentence structure, prepositions, etc.
  - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
  - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
  - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading ▪ According to the Information given in the Online Course speexx

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Certificate Course French

Module Code: DLFSWF1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Alexa Wiese (Certificate Course French)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Certificate Course French (DLFSWF01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Participation Certificate (passed / not passed) Study Format: myStudies Participation Certificate (passed / not passed)	

Weight of Module

see curriculum

Module Contents

To learn and deepen French as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Certificate Course French

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language French according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Certificate Course French

Course Code: DLFSWF01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of French as a foreign language is taught and practiced according to a CEFR placement test. Upon successful completion, students will receive a certificate corresponding to their chosen level.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language French according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply

and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)
    - to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)
- Grammar:
    - Level A1 - present and past tenses, sentence structure, prepositions, etc.
    - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
    - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
    - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading - According to the Information given in the Online Course speexx

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format myStudies

Study Format	Course Type
myStudies	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Foreign Language French

Module Code: DLFSF_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Britta Heienbrock (Foreign Language French)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Foreign Language French (DLFSF01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

To learn and deepen French as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Foreign Language French

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language French according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Foreign Language French

Course Code: DLFSF01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of French as a foreign language is taught and practiced according to a CEFR placement test.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language French according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)

- to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)

- Grammar:
  - Level A1 - present and past tenses, sentence structure, prepositions, etc.
  - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
  - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
  - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading ▪ According to the Information given in the Online Course speexx

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Certificate Course Spanish

Module Code: DLFSWS1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Maja Popovic (Certificate Course Spanish)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Certificate Course Spanish (DLFSWS01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Participation Certificate (passed / not passed) Study Format: myStudies Participation Certificate (passed / not passed)	

Weight of Module

see curriculum

Module Contents

To learn and deepen Spanish as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Certificate Course Spanish

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Spanish according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Certificate Course Spanish

Course Code: DLFSWS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of Spanish as a foreign language is taught and practiced according to a CEFR placement test. Upon successful completion, students will receive a certificate corresponding to their chosen level.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Spanish according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply

and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)
    - to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)
- Grammar:
    - Level A1 - present and past tenses, sentence structure, prepositions, etc.
    - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
    - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
    - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading - According to the Information given in the Online Course speexx

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format myStudies

Study Format	Course Type
myStudies	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Foreign Language Spanish

Module Code: DLFSS_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Regina Cordes (Foreign Language Spanish)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Foreign Language Spanish (DLFSS01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

To learn and deepen Spanish as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Foreign Language Spanish

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Spanish according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Foreign Language Spanish

Course Code: DLFSS01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of Spanish as a foreign language is taught and practiced according to a CEFR placement test.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language Spanish according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)

- to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)

- Grammar:
  - Level A1 - present and past tenses, sentence structure, prepositions, etc.
  - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
  - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
  - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading ▪ According to the Information given in the Online Course speexx

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Certificate Course German

Module Code: DLFSWG1

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Melanie Görgmaier (Certificate Course German)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Certificate Course German (DLFSWG01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Participation Certificate (passed / not passed) Study Format: Distance Learning Participation Certificate (passed / not passed)	

Weight of Module

see curriculum

Module Contents

To learn and deepen German as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Certificate Course German

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language German according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Certificate Course German

Course Code: DLFSWG01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of German as a foreign language is taught and practiced according to a CEFR placement test. Upon successful completion, students will receive a certificate corresponding to their chosen level.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language German according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply

and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)
    - to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)
- Grammar:
    - Level A1 - present and past tenses, sentence structure, prepositions, etc.
    - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
    - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
    - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading - According to the Information given in the Online Course speexx

Study Format myStudies

Study Format	Course Type
myStudies	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Language Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Participation Certificate (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Foreign Language German

Module Code: DLFSG

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Foreign Language German)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Foreign Language German (DLFSG01)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam, 90 Minutes Study Format: myStudies Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

To learn and deepen German as a foreign language at the chosen CEFR level with regard to the respective qualitative aspects of range, correctness, fluency, interaction and coherence. The module includes a combination of listening, comprehension, writing and speaking exercises as well as various course material.

Learning Outcomes

Foreign Language German

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language German according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Languages	All Bachelor Programs in the Management field

Foreign Language German

Course Code: DLFSG01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The qualification objectives correspond to levels A1, A2, B1 and B2 according to the criteria of the Common European Framework of Reference for Languages (CEFR). Using everyday subject areas, chosen areas of specialization, and using basic and advanced grammatical structures, the use of German as a foreign language is taught and practiced according to a CEFR placement test.

Course Outcomes

On successful completion, students will be able to

- meet the qualification objectives according to the chosen level (A1, A2, B1 or B2) according to the criteria of the Common European Framework of Reference for Languages (CEFR).
- use the foreign language German according to a CEFR placement test on the basis of everyday topics, selected areas of specialization and by adapting basic and advanced grammatical structures.

Contents

- Depending on the CEFR placement, students will be proficient
  - to understand and use familiar, everyday expressions and very simple phrases aimed at satisfying concrete needs. They can introduce themselves and others and ask other people questions about themselves - e.g. where they live, what kind of people they know or what kind of things they have - and they can give answers to questions of this kind. They can communicate in a simple way if the person they are talking to speaks slowly and clearly and is willing to help. (Level A1)
  - to understand sentences and frequently used expressions related to areas of immediate importance (e.g. personal and family information, shopping, work, local area). You can communicate in simple, routine situations involving a simple and direct exchange of information about familiar things. You can describe by simple means your own background and education, immediate environment and things related to immediate needs. (Level A2)
  - to understand the main points when clear standard language is used and when it's about familiar things from work, school, leisure, etc. You can handle most situations encountered while traveling in the language area. You can express yourself simply and coherently on familiar topics and personal areas of interest. You can talk about experiences and events, describe dreams, hopes and goals, and give brief reasons or explanations for plans and opinions. (Level B1)

- to understand the main content of complex texts on concrete and abstract topics; and to understand specialist discussions in their own area of specialization. You can communicate so spontaneously and fluently that a normal conversation with native speakers is quite possible without major effort on either side. You can express yourself clearly and in detail on a wide range of topics, explain a point of view on a topical issue and state the advantages and disadvantages of various options. (Level B2)

- Grammar:
  - Level A1 - present and past tenses, sentence structure, prepositions, etc.
  - Level A2 - among other things tenses of the past, differences in the past tenses, imperative, subordinate clauses, pronouns (dative, accusative)
  - Level B1 - including introduction of past perfect, conjunctions, introduction of passive voice, adverbs, adjectives (difference), future tense
  - Level B2 - among others verb constructions, conditional clauses, indirect speech

Literature
Compulsory Reading
Further Reading ▪ According to the Information given in the Online Course speexx

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods
Instructional Methods are provided by the External Service Provider

Studium Generale I

Module Code: DLBSG1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Studium Generale I)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Studium Generale I (DLBSG01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies See Selected Course Study Format: Distance Learning See Selected Course	

Weight of Module

see curriculum

Module Contents

In principle, all IU Bachelor courses can be selected as courses for the "Studium Generale", so that the content can be chosen from the entire breadth of the IU distance learning program.

Learning Outcomes

Studium Generale I

On successful completion, students will be able to

- apply acquired key competencies to issues in their field of study and/or in their professional environment.
- to deepen one's own skills and abilities in a self-directed manner.
- to look beyond the boundaries of their own area of expertise.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
It is a stand-alone offering with possible references to various required and elective modules	All IU Distance Learning Bachelor Programs

Studium Generale I

Course Code: DLBSG01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In the course "Studium Generale I", students deepen their knowledge in a self-selected subject area by completing an IU course outside their applicable curriculum. This gives them the opportunity to look beyond their own subject area and acquire further competencies. The associated option enables students to self-determine their study content to focus even more on issues relevant to them and/or to strengthen or develop selected competencies.

Course Outcomes

On successful completion, students will be able to

- apply acquired key competencies to issues in their field of study and/or in their professional environment.
- to deepen one's own skills and abilities in a self-directed manner.
- to look beyond the boundaries of their own area of expertise.

Contents

- The course "Studium Generale I" offers students the opportunity to take courses outside of their curriculum and the result can be credited as an elective subject. In principle, all IU bachelor courses that fulfill the following requirements are creditable for this purpose:
  - They are not part of an integral part of the applicable mandatory curriculum.
  - They do not have admission requirements or students can prove that they have met the admission requirement.
- The examination of the selected courses must be taken in full and finally passed in order to be credited as part of the 'Studium Generale' .

Literature

Compulsory Reading

Further Reading

- See course description of the selected course

Study Format myStudies

Study Format	Course Type
myStudies	See Selected Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	See Selected Course

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
0 h	0 h	0 h	0 h	0 h	0 h

Instructional Methods
see selected course

Study Format Distance Learning

Study Format	Course Type
Distance Learning	See Selected Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	See Selected Course

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
0 h	0 h	0 h	0 h	0 h	0 h

Instructional Methods
See Selected Course

Studium Generale II

Module Code: DLBSG2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Studium Generale II)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Studium Generale II (DLBSG02_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning See Selected Course Study Format: myStudies See Selected Course	

Weight of Module

see curriculum

Module Contents

In principle, all IU Bachelor courses can be selected as courses for the "Studium Generale", so that the content can be chosen from the entire breadth of the IU distance learning program.

Learning Outcomes

Studium Generale II

On successful completion, students will be able to

- apply acquired key competencies to issues in their field of study and/or in their professional environment.
- to deepen one's own skills and abilities in a self-directed manner.
- to look beyond the boundaries of their own area of expertise.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
It is a stand-alone offering with possible references to various required and elective modules	All IU Distance Learning Bachelor Programs

Studium Generale II

Course Code: DLBSG02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In the course "Studium Generale II", students deepen their knowledge in a self-selected subject area by completing an IU course outside their applicable curriculum. This gives them the opportunity to look beyond their own subject area and acquire further competencies. The associated option enables students to self-determine their study content to focus even more on issues relevant to them and/or to strengthen or develop selected competencies.

Course Outcomes

On successful completion, students will be able to

- apply acquired key competencies to issues in their field of study and/or in their professional environment.
- to deepen one's own skills and abilities in a self-directed manner.
- to look beyond the boundaries of their own area of expertise.

Contents

- The course "Studium Generale II" offers students the opportunity to take courses outside of their curriculum and the result can be credited as an elective subject. In principle, all IU bachelor courses that fulfill the following requirements can be chosen for this purpose:
  - They are not part of an integral part of the applicable mandatory curriculum.
  - They do not have admission requirements or students can prove that they have met the admission requirement.
- The examination of the selected courses must be taken in full and finally passed in order to be credited as part of the 'Studium Generale' .

Literature

Compulsory Reading

Further Reading

- See course description of the selected course

Study Format Distance Learning

Study Format	Course Type
Distance Learning	See Selected Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	See Selected Course

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
0 h	0 h	0 h	0 h	0 h	0 h

Instructional Methods
See Selected Course

Study Format myStudies

Study Format	Course Type
myStudies	See Selected Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	See Selected Course

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
0 h	0 h	0 h	0 h	0 h	0 h

Instructional Methods

Artificial Intelligence

Module Code: DLBDSEAIS1-01

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Kristina Schaaff (Artificial Intelligence)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Artificial Intelligence (DLBDSEAIS01-01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam, 90 Minutes Study Format: Distance Learning Exam, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- History of AI
- Modern AI Systems
- Reinforcement Learning
- Natural Language Processing (NLP)
- Computer Vision

Learning Outcomes

Artificial Intelligence

On successful completion, students will be able to

- chart the historical developments in artificial intelligence.
- understand the approach of contemporary AI systems.
- comprehend the concepts behind reinforcement learning.
- analyze natural language using basic NLP techniques.
- scrutinize images and their contents.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Data Science & Artificial Intelligence	All Bachelor Programs in the IT & Technology field

Artificial Intelligence

Course Code: DLBDSEAIS01-01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The quest for artificial intelligence (AI) has captured humanity's interest for many decades and has been an active research area since the 1960s. This course will give a detailed overview of the historical developments, successes, and set-backs in AI, as well as modern approaches in the development of artificial intelligence such as generative AI. The course gives an introduction to reinforcement learning, a process similar to how humans and animals experience the world: exploring the environment and inferring the best course of action. The course also covers the principles of natural language processing and computer vision, both of which are key ingredients for an artificial intelligence to be able to interact with its environment.

Course Outcomes

On successful completion, students will be able to

- chart the historical developments in artificial intelligence.
- understand the approach of contemporary AI systems.
- comprehend the concepts behind reinforcement learning.
- analyze natural language using basic NLP techniques.
- scrutinize images and their contents.

Contents

1. History of AI
   - 1.1 Historical Developments
   - 1.2 AI Winter
   - 1.3 Expert Systems
   - 1.4 Notable Advances
2. Modern AI Systems
   - 2.1 Narrow versus General AI
   - 2.2 Application Areas
3. Reinforcement Learning
   - 3.1 What is Reinforcement Learning?
   - 3.2 Markov Chains and Value Function

3.3 Temporal-Difference and Q Learning

4. Natural Language Processing (NLP)
   - 4.1 Introduction to NLP and Application Areas
   - 4.2 Basic NLP Techniques
   - 4.3 Vectorizing Data
   - 4.4 Advanced NLP Models

5. Computer Vision
   - 5.1 Introduction to Computer Vision
   - 5.2 Image Representation and Geometry
   - 5.3 Feature Engineering
   - 5.4 Semantic Segmentation
   - 5.5 Advanced Image Generation Techniques

Literature

Compulsory Reading

Further Reading

- Bear, M. F., Barry, W. S., & Paradiso, M. A. (2020). Neuroscience: Exploring the brain (4th ed.). Lippincott Williams & Wilkins.
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep learning. MIT Press.
- Grus, J. (2019). Data science from scratch: First principles with Python. O'Reilly.
- Jurafsky, D., & Martin, J. H. (2022). Speech and language processing (3rd ed.). Prentice Hall.
- Morris, M. R., Sohl-Dickstein, J., Fiedel, N., Warkentin, T., Dafoe, A., Faust, A., Farabet, C., & Legg, S. (2024). Proceedings of the 41st International Conference on Machine Learning. PMLR, 235, 36308–36321.
- Russell, S. J., & Norvig, P. (2022). Artificial intelligence: A modern approach (4th ed., global ed.). Pearson.
- Sutton, R. S., & Barto, A. G. (2018). Reinforcement learning: An introduction (2nd ed.). Adaptive Computation and Machine Learning. MIT Press.
- Szeliski, R. (2022). Computer vision: Algorithms and applications (2nd ed.). Texts in Computer Science. Springer.
- Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, Ł., & Polosukhin, I. (2017). Attention is all you need. Advances in Neural Information Processing Systems, 30. Curran Associates, Inc.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Practice Exam
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Online Tests
☑ Recorded Live Sessions	☑ Slides	

Project: AI Excellence with Creative Prompting Techniques

Module Code: DLBPKIEKPT1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Knut Linke (Project: AI Excellence with Creative Prompting Techniques)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: AI Excellence with Creative Prompting Techniques (DLBPKIEKPT01_E)

Module Exam Type	
Module Exam Study Format: myStudies Oral Project Report Study Format: Duales myStudium Oral Project Report Study Format: Distance Learning Oral Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

In this module, the students delve into the world of generative AI applications, creating AI-generated content like text, images, and videos, while learning to use, analyze, and evaluate these systems in their respective study fields.

Learning Outcomes

Project: AI Excellence with Creative Prompting Techniques

On successful completion, students will be able to

- comprehend and apply basic prompting techniques in generative AI applications.
- analyze and evaluate the effectiveness of the basic prompts.
- apply ethical considerations to the design and use of AI for basic prompting techniques.
- design, implement, and refine effective prompts to real-world scenarios through hands-on exercises.
- showcase creative and innovative thinking in the application of prompting techniques to solve complex problems in their field of studies.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Data Science & Artificial Intelligence	All Bachelor Programs in the IT & Technology field

Project: AI Excellence with Creative Prompting Techniques

Course Code: DLBPKIEKPT01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students explore the fascinating world of prompting in generative AI applications. They engage in hands-on exercises to create new AI-generated content including text, images, and videos. Through these exercises, students learn how to effectively use, analyze, and evaluate these systems within their respective fields of study.

Course Outcomes

On successful completion, students will be able to

- comprehend and apply basic prompting techniques in generative AI applications.
- analyze and evaluate the effectiveness of the basic prompts.
- apply ethical considerations to the design and use of AI for basic prompting techniques.
- design, implement, and refine effective prompts to real-world scenarios through hands-on exercises.
- showcase creative and innovative thinking in the application of prompting techniques to solve complex problems in their field of studies.

Contents

- In this course, students work on a basic practical implementation of a generative AI use case by choosing from a selection provided in the complementary guideline. The course provides practical examples as learning materials and exercises with basic prompting techniques for open-source text, image, and video generation use cases. The exercises are designed to inspire and guide students in completing their own generative AI use case work, which includes a use case description, chosen prompting techniques, outcomes, and critical evaluations from both technical and ethical perspectives.

Literature
Compulsory Reading
Further Reading ▪ Dang, H., Mecke, L., Lehmann, F., Goller, S., & Buschek, D. (2022). How to prompt? Opportunities and challenges of zero- and few-shot learning for human-AI interaction in creative applications of generative models. arXiv. https://arxiv.org/pdf/2209.01390.pdf ▪ Eapen, T. T., Finkenstadt, D. J., Folk, J., & Venkataswamy, L. (2023). How generative AI can augment human creativity. Harvard Business Review, July–August, 56–64. ▪ Wei, J., Wang, X., Schuurmans, D., Bosma, M. Ichter, B., Xia, F., Chi, E. H., Le., Q. V., & Zhou, D. (2023). Chain-of-though prompting elicit reasoning in large language models. arXiv. https://arxiv.org/pdf/2201.11903.pdf

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Slides	☑ Guideline
☑ Intensive Live Sessions/Learning Sprint		
☑ Recorded Live Sessions		

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Personal Career Plan

Module Code: DLBKAENT1_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Annette Strauß (Personal Career Plan)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Personal Career Plan (DLBKAENT01_E)

Module Exam Type	
Module Exam Study Format: Duales myStudium Advanced Workbook Study Format: myStudies Advanced Workbook Study Format: Distance Learning Advanced Workbook	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Career Theories and Approaches
- Career Development
- Career Planning
- Personal Assessment
- Career Choice
- Develop a Career Strategy and Manage your Career
- Global Careers
- Search for Employment in Germany and Abroad

Learning Outcomes

Personal Career Plan

On successful completion, students will be able to

- understand, apply, and reflect presented career theory and models with regard to their personal situation to arrive at a concept or pictore of a desired career.
- understand and critically reflect the concept of career and career planning.
- understand the relevance of a strategically oriented career planning.
- understand the importance of and conduct a personal assessment to identify one's personality, values, motivation, strengths, competencies, skills, and interests.
- understand the necessity of building and maintaining their own personal brand.
- understand differing job search processes across national/international contexts, and to create context-sensitive job applications accordingly.
- understand the principles of global careers and how to effectively act in international environments.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Human Resources	All Bachelor Programs in the Human Resources field

Personal Career Plan

Course Code: DLBKAENT01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In today's complex and ever-changing environment, the forms of careers vary depending on the context, understanding of values, and market dynamics. The 'classic career ladder' that one is climbing being the only predominant form of career is long outdated, and individuals are being confronted with a great number of opportunities regarding industry or job choice and working arrangements.Considering the great variety of options especially for well-educated individuals, has become more important than ever to make informed decisions. This course is designed to support students maneauvering themselves through these complexities of their personal career plan, whereby self-awareness, self-reflection, and goal-setting are important elements of this process. Guided by central elements of career theory, career models, and research outcomes, students will be given tools and reflection exercises to arrive at a solid, directly applicable strategy to further steet their professional progress and career steps.

Course Outcomes

On successful completion, students will be able to

- understand, apply, and reflect presented career theory and models with regard to their personal situation to arrive at a concept or pictore of a desired career.
- understand and critically reflect the concept of career and career planning.
- understand the relevance of a strategically oriented career planning.
- understand the importance of and conduct a personal assessment to identify one's personality, values, motivation, strengths, competencies, skills, and interests.
- understand the necessity of building and maintaining their own personal brand.
- understand differing job search processes across national/international contexts, and to create context-sensitive job applications accordingly.
- understand the principles of global careers and how to effectively act in international environments.

Contents

1. Career Theories and Approaches
    - 1.1 Traditional Career Theories and Models
    - 1.2 Protean Career Orientation
    - 1.3 Career Learning Cycle
2. Career Development

- 2.1 Career Motives
- 2.2 Career Roles
- 2.3 Career Performance

3. Career Planning
   - 3.1 Essentials of Career Planning
   - 3.2 The Career Planning Process
   - 3.3 Contingencies of Career Planning

4. Personal Assessment
   - 4.1 Personality
   - 4.2 Values and Motivation
   - 4.3 Competencies, Skills, Strengths, and Fields of Interest

5. Career Choice
   - 5.1 Possible Career Paths
   - 5.2 Forms of Careers
   - 5.3 Employability
   - 5.4 Career Identity

6. Develop a Career Strategy and Manage your Career
   - 6.1 Career Capital
   - 6.2 Career Goals
   - 6.3 Career Success
   - 6.4 Personal Reflection
   - 6.5 Personal Branding

7. Global Careers
   - 7.1 Forms of Global Careers
   - 7.2 Individual Characteristics of Global Leaders
   - 7.3 Role of Interculturality
   - 7.4 Diversity and Inclusion

8. Search for Employment in Germany and Abroad
   - 8.1 Job Search Databases
   - 8.2 Networks and Platforms
   - 8.3 Shaping Resume and Cover Letter
   - 8.4 Written and Video Application
   - 8.5 Selection Procedures

Literature

Compulsory Reading

Further Reading

- Baruch, Y. (2022). Managing Careers and Employability. SAGE.
- Greenhaus, J.H., Callanan, G.A., & Godshalk, V.M. (2018). Career Management for Life (5th edition). College of Business & Public Management Faculty Books.
- Hoeckstra, H. (2011). A career roles model of career development. Journal of Vocational Behavior, 78(2), 159-173.
- Ibarra, H. (2004). Working Identity: Unconventional Strategies for Reinventing Your Career. Harvard Business School Press.
- Kingsley, T. (2022). Personal Branding. Independently published.
- Ng, T.W.H., Eby, L.T., Sorensen, K.L., & Feldman, D.C. (2005). Predictors of objective and subjective career success: A meta-analysis. Personnel psychology, 58(2), 367-408.
- Ng, T.W.H., & Feldman, D.C. (2014). Subjective career success: A meta-analytic review. Journal of Vocational Behavior, 85(2), 169-179.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Advanced Workbook

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Advanced Workbook

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Advanced Workbook

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Personal Elevator Pitch

Module Code: DLBKAENT2_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	DLBKAENT01_E	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Heike Schiebeck (Personal Elevator Pitch)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Personal Elevator Pitch (DLBKAENT02_E)

Module Exam Type	
Module Exam Study Format: Duales myStudium Concept Presentation Study Format: Distance Learning Concept Presentation Study Format: myStudies Concept Presentation	**Split Exam**
Weight of Module see curriculum	

Module Contents

Through the application of self-reflection, self-awareness based on relevant career success parameters students should develop career goals, career stages, and their career strategy. Taking into account their current professional and/or study situation, the central elements of a short-, and medium-term career planning are worked out by the students for their individual case. At the end of the course, students will be able to present their personal elevator pitch and communicate it in a proper way that is appropriate for the target group or audience. In this way, they will reflect on their current professional situation. The personal elevator pitch, being at hear of personal branding, supports the conveyance of this vision during personal networking activities.

Learning Outcomes

Personal Elevator Pitch

On successful completion, students will be able to

- identify their career goals, career stages, and the personal status quo with regard to their achievement.
- reflect their current situation and define where they want to aim.
- develop a career strategy by creating personal career goals and a coherent action plan.
- understand and apply the process of building a personal brand.
- define their identity, skills, profession, reasons to believe and necessary investments.
- identify their personal strengths and their core driver.
- understand the power of effective communication, networking, and storytelling.
- understand the principles and apply the process of designing a strong personal elevator pitch.
- critically reflect and adapt their personal elevator pitch to the specificities of the context, audience, target group, and way of delivery.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Human Resources	All Bachelor Programs in the Human Resources field

Personal Elevator Pitch

Course Code: DLBKAENT02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	DLBKAENT01_E

Course Description

The forms of careers vary depending on the context or personal preferences in today's ever-changing, demanding, and complex environment. Changes in the environment, as for example technology, sustainability, and the rise of artificial intelligence, push individuals to take career transitions into their own hands. Personal endeavors to develop one's career through the acquisition of, for instance, new projects, jobs, or employers, require the right strategies to be successful. Contacts through targeted networking and the development of one's own brand play a special role here. Evenly so for individuals starting their careers after having accomplished their education, effective networking is key to career entry and development in these turbulent times. In addition, personal branding is a concept that not only has gained relevance in research but is also widely used in career counseling. Developing and conveying a personal brand is central to this course. Using the personal branding approach during networking activities, individuals can actively contribute to their career success.

Course Outcomes

On successful completion, students will be able to

- identify their career goals, career stages, and the personal status quo with regard to their achievement.
- reflect their current situation and define where they want to aim.
- develop a career strategy by creating personal career goals and a coherent action plan.
- understand and apply the process of building a personal brand.
- define their identity, skills, profession, reasons to believe and necessary investments.
- identify their personal strengths and their core driver.
- understand the power of effective communication, networking, and storytelling.
- understand the principles and apply the process of designing a strong personal elevator pitch.
- critically reflect and adapt their personal elevator pitch to the specificities of the context, audience, target group, and way of delivery.

Contents

- The core element of this course is a personal elevator pitch with the use of a personal branding canvas. The creation of a personal brand is not only relevant for self-employed freelancers or entrepreneurs but is as well helpful for individuals who strive for their own further development on the career ladder within their organization or for those who

are seeking employment. Having understood the characteristics of and reasoning behind personal branding and the underlying process, students will be able to apply this process to their own person and situation.
- Self-awareness being the main 'ingredient' for an effective personal brand, students will be encouraged to go on an intensive self-reflection journey to deepen their understanding of their identity, skills, profession, and reasons to believe for a personal brand, and subsequently, for a personal elevator pitch.
- Being at the heart of and the essence of personal branding, the elevator pitch enables individuals to impactfully present themselves in a nutshell to important individuals and potential employers. Having understood the principles and key success factors characterizing an elevator pitch, students will be able to develop their own one. They will learn to consider aspects like timing, benefit, clear positioning, target audience through an oral form of delivery. In addition, the role of communication, networking and storytelling principles will be highlighted.
- Knowledge of the core elements and success factors of the personal elevator pitch within the framework of the individual career development.

Literature

Compulsory Reading

Further Reading

- Dowling, D. (2009). How to Perfect an Elevator Pitch About Yourself. Harvard Business Review. https://hbr.org/2009/05/how-to-perfect-an-elevator-pit.
- Gorbatov, S., Khapova, S.N., & Lysova, E.I. (2018). Personal branding: Interdisciplinary systematic review and research agenda. Frontiers in psychology, 2238.
- Gorbatov, S., Khapova, S.N., & Lysova, E.I. (2019). Get noticed to get ahead: The impact of personal branding on career success. Frontiers in psychology, 2662.
- Jourdan Jr., Louis F., Deis, M., & Lysova, E.I. (2010). Getting Your Elevator Pitch To The Plate. Business Journal for Entrepreneurs, 2010(1), 43-47.
- Woodside, A.G. (2010). Brand consumer storytelling theory and research: Introduction to a Psychology & Marketing special issue. Psychology & Marketing, 27(6), 531-540.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Concept Presentation

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Concept Presentation

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Concept Presentation

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Project: AWS - Cloud Advanced

Module Code: DLBPAWSCLAD

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Tianxiang Lu (Project: AWS - Cloud Advanced)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: AWS - Cloud Advanced (DLBPAWSCLAD01)

Module Exam Type	
Module Exam Study Format: Distance Learning Written Assessment: Project Report Study Format: Duales myStudium Written Assessment: Project Report Study Format: myStudies Written Assessment: Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

This course offers advanced understanding of AWS, with a particular emphasis on specialized areas such as Solutions Architecture, Compliance & Security, and AI & Machine Learning. Students will acquire hands-on expertise in these areas, with the goal of enabling them to deploy laaS, Paas, or SaaS workloads using AWS, effectively tackle real-life interdisciplinary challenges, and confidently handle service configurations within the AWS cloud console.

Learning Outcomes

Project: AWS - Cloud Advanced

On successful completion, students will be able to

- understand and articulate the core services provided by AWS within chosen specialization tracks, including Solutions Architect, Compliance & Security, and AI & Machine Learning.
- critically examine the pros and cons of developing and deploying real-world scenarios using AWS IaaS, PaaS, vs. SaaS and public, private or hybrid deployment demonstrating a clear grasp of the necessary service and deployment intricacies.
- manage and configure profound service settings within the AWS cloud console, showing depth in technical proficiency and operational capabilities.
- critically assess, test and monitor the effect of different AWS deployment features, addressing interdisciplinary challenges through the appropriate use of AWS cloud services in realistic use cases.
- assess and critically reflect on AWS-based solutions, considering industry compliance and security requirements, ensuring a robust understanding of the legal and regulatory framework.
- apply and implement machine learning and artificial intelligence concepts using AWS to solve real-world problems, demonstrating innovative thinking and practical application of theoretical knowledge.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: AWS - Cloud Advanced

Course Code: DLBPAWSCLAD01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

AWS (Amazon Web Services) is a comprehensive cloud computing platform provided by Amazon that offers scalable computing power, storage, and various other functionalities to help businesses and individuals deploy applications and manage data efficiently. It reduces the need for physical hardware, thus lowering costs and increasing flexibility by allowing users to access services and resources on-demand from anywhere in the world. This service is highly relevant for daily life and business as it supports a wide range of applications and services, from hosting websites to supporting IoT devices, big data analytics and machine learning, ultimately facilitating innovation, scalability, and global operations. The course prepares students for the AWS Cloud Solution Architect Professional Certificate. It dives deeper into AWS core services, focusing on sophisticated deployment and management techniques. Students will critically examine and apply real-world scenarios using AWS IaaS, PaaS, and SaaS, and navigate complex deployment models. They will gain technical proficiency in managing advanced service settings within the AWS cloud console and address interdisciplinary challenges through hands-on practice. Additionally, the course covers assessing AWS solutions for compliance and security, ensuring robust understanding of legal frameworks. Students will also implement machine learning and AI concepts to solve real-world problems, fostering innovative thinking and practical application, and preparing them for the dynamic demands of the tech industry.

Course Outcomes

On successful completion, students will be able to

- understand and articulate the core services provided by AWS within chosen specialization tracks, including Solutions Architect, Compliance & Security, and AI & Machine Learning.
- critically examine the pros and cons of developing and deploying real-world scenarios using AWS IaaS, PaaS, vs. SaaS and public, private or hybrid deployment demonstrating a clear grasp of the necessary service and deployment intricacies.
- manage and configure profound service settings within the AWS cloud console, showing depth in technical proficiency and operational capabilities.
- critically assess, test and monitor the effect of different AWS deployment features, addressing interdisciplinary challenges through the appropriate use of AWS cloud services in realistic use cases.
- assess and critically reflect on AWS-based solutions, considering industry compliance and security requirements, ensuring a robust understanding of the legal and regulatory framework.
- apply and implement machine learning and artificial intelligence concepts using AWS to solve real-world problems, demonstrating innovative thinking and practical application of theoretical knowledge.

Contents

- This course ensures students gain a comprehensive understanding of AWS, specializing in Solutions Architect, Compliance & Security, and AI & Machine Learning. They will articulate core AWS services and critically examine the pros and cons of deploying real-world scenarios using AWS IaaS, PaaS, SaaS, and different deployment models (public, private, hybrid).
- Students will manage and configure service settings within the AWS cloud console, demonstrating technical proficiency. They will assess, test, and monitor AWS deployment features, addressing interdisciplinary challenges using realistic use cases. Additionally, students will evaluate AWS-based solutions for industry compliance and security, understanding the legal and regulatory frameworks.
- The course also covers applying machine learning and AI concepts using AWS to solve real-world problems, encouraging innovative thinking and practical application. This approach prepares students to excel in cloud architecture, compliance protocols, security measures, and AI-driven problem-solving, ensuring readiness for the tech industry's dynamic demands.

Literature
Compulsory Reading
Further Reading ▪ AWS Training and Certification Skill Builder. (2024). AWS Solutions Architect – Knowledge Badge Readiness Path (51 hours). ▪ AWS Training and Certification Skill Builder. (2024). Generative AI Learning Plan for Developers (12 hours). ▪ AWS Training and Certification Skill Builder. (2024). Online Course Supplement: Practical Data Science with Amazon SageMaker (1 day).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Project: AWS - Cloud Essentials

Module Code: DLBPAWSCLES

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester		English

Module Coordinator
Georgi Dimchev (Project: AWS - Cloud Essentials)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Project: AWS - Cloud Essentials (DLBPAWSCLES01)

Module Exam Type	
Module Exam Study Format: myStudies Written Assessment: Project Report Study Format: Duales myStudium Written Assessment: Project Report Study Format: Distance Learning Written Assessment: Project Report	**Split Exam**
Weight of Module see curriculum	

Module Contents

Students will learn the foundational concepts and services of Amazon Web Services (AWS), covering its core infrastructure services including computing, storage, and networking through practical experience. Emphasis is placed on practical skills for deploying Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) solutions.

Learning Outcomes

Project: AWS - Cloud Essentials

On successful completion, students will be able to

- understand the core services of AWS including compute, network, databases, and storage, deployment models (on-premises, hybrid, and vpc).
- explain the shared responsibility model, describe the basic global infrastructure and core security services.
- describe the AWS Well-Architected Framework and the basics of AWS Cloud Migration.
- get familiar with the terminology and concepts related to AWS Services, the AWS Management Console, AWS security measures, IAM and AWS networking services.
- apply and manage core service settings within the AWS cloud console effectively.
- assess data storage services in AWS to meet various application needs.
- plan and implement a scenario-based serverless service for small or medium-sized companies.
- configure basic network security using Amazon CloudWatch monitoring features for simple use cases in AWS, ensuring secure cloud operations.
- critically examine the core billing, account management, and pricing models and explain how to use pricing tools to make cost-effective choices for AWS services.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: AWS - Cloud Essentials

Course Code: DLBPAWSCLES01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Amazon Web Services (AWS) is a comprehensive cloud computing platform provided by Amazon that offers scalable computing power, storage, and various other functionalities to help businesses and individuals deploy applications and manage data efficiently. It reduces the need for physical hardware, thus lowering costs and increasing flexibility by allowing users to access services and resources on-demand from anywhere in the world. This service is highly relevant for daily life and business as it supports a wide range of applications and services, from hosting websites to supporting IoT devices and big data analytics, ultimately facilitating innovation, scalability, and global operations.This course prepares students for the AWS Cloud Practitioner Certificate, providing a foundational understanding of AWS core services. Students will learn to articulate the benefits and use cases of AWS IaaS, PaaS, and SaaS, and grasp the basics of public, private, and hybrid cloud deployments. The course emphasizes practical skills in managing and configuring AWS services, ensuring students can effectively navigate the AWS cloud console. It lays the groundwork for critical assessments of AWS deployment features, addressing compliance and security requirements, and preparing students for more advanced AWS certifications and applications

Course Outcomes

On successful completion, students will be able to

- understand the core services of AWS including compute, network, databases, and storage, deployment models (on-premises, hybrid, and vpc).
- explain the shared responsibility model, describe the basic global infrastructure and core security services.
- describe the AWS Well-Architected Framework and the basics of AWS Cloud Migration.
- get familiar with the terminology and concepts related to AWS Services, the AWS Management Console, AWS security measures, IAM and AWS networking services.
- apply and manage core service settings within the AWS cloud console effectively.
- assess data storage services in AWS to meet various application needs.
- plan and implement a scenario-based serverless service for small or medium-sized companies.
- configure basic network security using Amazon CloudWatch monitoring features for simple use cases in AWS, ensuring secure cloud operations.
- critically examine the core billing, account management, and pricing models and explain how to use pricing tools to make cost-effective choices for AWS services.

Contents

- This course offers a comprehensive exploration of Amazon Web Services (AWS), focusing on its core services such as computing, networking, databases, and storage solutions. Students will delve into the AWS shared responsibility model, understand the global infrastructure, and learn about the integral security services provided. This also covers the AWS Well-Architected Framework and an introduction of the fundamentals for cloud migration strategies. Through hands-on exercises, students will gain proficiency in managing AWS environments using the AWS Management Console and implement security measures via AWS Identity and Access Management (IAM) and network services. Additionally, the course emphasizes the importance of cost management, enabling students to critically analyze AWS pricing models to make informed financial decisions for cloud-based solutions.

Literature

Compulsory Reading

Further Reading

- AWS Training and Certification Skill Builder. (2024). AWS Cloud Practitioner Essentials (7 hours).
- AWS Training and Certification Skill Builder. (2024). AWS Cloud Quest: Cloud Practitioner.
- AWS Training and Certification Skill Builder. (2024). AWS Technical Essentials (4 hours).
- AWS Training and Certification Skill Builder. (2024). Serverless – Knowledge Badge Readiness Path (13 hours).
- AWS Training and Certification Skill Builder. (2024). Standard Exam Prep Plan: AWS Certified Cloud Practitioner (CLF-C02) (18 hours).

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Project: Smart Product Solutions

Module Code: DLBIEPSPS

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Sheikh Radiah Rahim Rivu (Project: Smart Product Solutions)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Smart Product Solutions (DLBIEPSPS01)

Module Exam Type

Module Exam	Split Exam
Study Format: Duales myStudium Oral Project Report Study Format: Distance Learning Oral Project Report Study Format: myStudies Oral Project Report	

Weight of Module

see curriculum

Module Contents

This course focuses on the application of agile engineering methods for smart product solutions within the framework of a practice-oriented project. The architecture and mechanics of smart product solutions will be described by means of their integrated business model components.

Learning Outcomes

Project: Smart Product Solutions

On successful completion, students will be able to

- answer the question of the relevance of dynamic business models of smart product solutions for business practice.
- describe and analyze smart product solutions by means of the business model architecture and mechanics.
- select and apply the right tools from the engineering methodology toolbox of smart product solutions for the modelling and analysis of digital business models in a practice-oriented way.
- develop management cockpits to support decision-making in the implementation of smart product solutions.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Computer Science & Software Development	All Bachelor Programs in the IT & Technology field

Project: Smart Product Solutions

Course Code: DLBIEPSPS01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

Smart product solutions have the potential to increase the efficiency of existing business models in the context of digital transformation. In addition to the expansion and optimization of traditional business models, smart product solutions also create completely new business models, in which, for example, revenues are not linked to the transfer of ownership of the product, but to its use. In practice, however, the design and analysis of smart product solutions and their business models is difficult for many companies, as the complexity of these smart solutions results in insufficient methodological know-how. Against this background, the students apply various instruments and modelling tools to describe and analyze smart product solutions within the framework of a practice-oriented project.

Course Outcomes

On successful completion, students will be able to

- answer the question of the relevance of dynamic business models of smart product solutions for business practice.
- describe and analyze smart product solutions by means of the business model architecture and mechanics.
- select and apply the right tools from the engineering methodology toolbox of smart product solutions for the modelling and analysis of digital business models in a practice-oriented way.
- develop management cockpits to support decision-making in the implementation of smart product solutions.

Contents

- By means of an agile engineering approach, students learn about the complex interrelationships of smart product solutions in a project-oriented setting. In addition to the structural description, students also gain a comprehensive insight into the quantitative modeling of the dynamic interrelationships of smart product solutions and their business models at a specific product solution level. The consistent application of techniques and tools from the engineering construction kit of smart product solutions enables the development of new business models as well as the adaptation of existing business models through the flexible configuration of interdependent components. Radical innovations with a completely new benefits are just as possible as incremental adjustments in a more evolutionary transformation process. Through the abstract description of the architecture

and the dynamic modelling of the mechanics of the smart product solutions and their business models, students learn the basics for effective decision support in practice, which ensures continuous learning in a digital world with growing dynamic complexity.

Literature

Compulsory Reading

Further Reading

- Boßlau, M. (2021). Business Model Engineering for Smart Product-Service Systems. Procedia CIRP, 104, 565–570.
- Boßlau, M. (2021). Digital Engineering of Dynamic Business Models for Smart Product-Service Systems (Proceedings of the International System Dynamics Conference). Chicago. (Available on the Internet)
- Negash, Y. T., & Calahorrano Sarmiento, L. S. (2023). Smart product-service systems in the healthcare industry: Intelligent connected products and stakeholder communication drive digital health service adoption. Heliyon, 9(2), e13137.
- Pöppelbuß, J., & Durst, C. (2019). Smart Service Canvas – A tool for analyzing and designing smart product-service systems. Procedia CIRP, 83, 324–329.
- Zawadzki, P./Żywicki, K. (2016): Smart Product Design and Production Control for Effective Mass Customization in the Industry 4.0 Concept. Management and Production Engineering Review, 7(3), 105–112.

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Study Format myStudies

Study Format	Course Type
myStudies	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	☑ Slides	☑ Guideline

Internship: Engineering

Module Code: DLBWINGPIW_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	30	900 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

N.N. (Internship: Engineering)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Internship: Engineering (DLBWINGPIW01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Internship Reflection Paper (passed / not passed)	

Weight of Module

see curriculum

Module Contents

As part of this internship, students document and reflect on their everyday practice. This is done against the background of the knowledge they have acquired. Students now apply this theoretical knowledge in various fields of practice and reflect on this.

Learning Outcomes

Internship: Engineering

On successful completion, students will be able to

- transfer theoretical knowledge to practical problems.
- work independently on practical challenges, depending on the activities undertaken, and reflect on their success.
- better assess the scope, significance, and limits of theoretical concepts given practical requirements.
- demonstrate the application of learned methods and technical concepts in different engineering science contexts and evaluate them.
- systematically analyze and document their personal and professional development in the field of engineering sciences through reflected practical experience.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of methods	All Bachelor Programs in the management field

Internship: Engineering

Course Code: DLBWINGPIW01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		30	none

Course Description

As part of this course, students document and reflect on their everyday practice and relate this to the specialist and related scientific knowledge they have acquired so far, as well as the skills they have already acquired. Students apply their theoretical knowledge in various fields of practice and reflect on this. The focus is on linking theory and practice, applying knowledge in the field of practice, and reflecting on these experiences in relation to theory and their own development.

Course Outcomes

On successful completion, students will be able to

- transfer theoretical knowledge to practical problems.
- work independently on practical challenges, depending on the activities undertaken, and reflect on their success.
- better assess the scope, significance, and limits of theoretical concepts given practical requirements.
- demonstrate the application of learned methods and technical concepts in different engineering science contexts and evaluate them.
- systematically analyze and document their personal and professional development in the field of engineering sciences through reflected practical experience.

Contents

- As part of the internship, students document and reflect on their everyday practice in the field of digital engineering. The respective individual problems and issues that arise are reflected upon from the perspective of professional action. The module gives students the opportunity to reflect on the content learned in previous modules based on practical experience and directly apply it where action-related knowledge has been acquired. Various concepts and methods are tested in practice and reflected upon in their specific application. The basis for this is the documentation, evaluation, and presentation of approaches and methods in the chosen context. The internship should be completed in the following companies:
- Companies in the automotive industry
- Companies in mechanical engineering
- Companies in the software development sector
- Companies in the telecommunications sector
- Companies in the field of renewable energies

- Companies in the medical technology sector
- Companies in the manufacturing sector

Literature
Compulsory Reading
Further Reading ▪ The literature of all modules of the degree program that have been completed up to the internship is relevant.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Internship Reflection Paper (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
0 h	0 h	0 h	0 h	900 h	900 h

Instructional Methods	
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Exam Preparation** ☑ Guideline

Intercultural and Ethical Decision-Making

Module Code: DLBCSIDM

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Zeljko Sevic (Intercultural and Ethical Decision-Making)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Intercultural and Ethical Decision-Making (DLBCSIDM01)

Module Exam Type	
Module Exam Study Format: myStudies Written Assessment: Case Study Study Format: Distance Learning Written Assessment: Case Study Study Format: Duales myStudium Written Assessment: Case Study	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Basics of Intercultural Competence
- Cultural Concepts
- Culture and Ethics
- Implications of Current Ethical Problems in the Area of Interculturality, Ethics, and Diversity
- Intercultural Learning and Working
- Case Studies for Cultural and Ethical Conflicts

Learning Outcomes

Intercultural and Ethical Decision-Making

On successful completion, students will be able to

- explain the most important terms in the areas of interculturality, diversity, and ethics.
- distinguish different explanatory patterns of culture.
- understand culture at different levels.
- plan processes of intercultural learning and working.
- understand the interdependencies of culture and ethics.
- independently work on a case study on intercultural competence.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programs in the Business field

Intercultural and Ethical Decision-Making

Course Code: DLBCSIDM01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

In this course, students acquire the necessary knowledge to understand intercultural competencies and current developments in the fields of diversity and ethics. Students will understand how to systematically plan and implement learning processes for the development of competences important in these areas. First, important terms are clarified and differentiated from each other, and cultural aspects are explained from different perspectives. In addition, students learn that cultural issues are relevant at different levels, for example, within a state, company, or other group. In this context, students also recognize the connection between ethics and culture with different interdependencies. On the basis of this knowledge, students are then familiarized with the different possibilities and potentials of intercultural and ethical learning and working. Practical cases are used to illustrate the importance of the relationships learned for today's work context in many companies. The students then work on a case study in which the acquired knowledge is systematically applied.

Course Outcomes

On successful completion, students will be able to

- explain the most important terms in the areas of interculturality, diversity, and ethics.
- distinguish different explanatory patterns of culture.
- understand culture at different levels.
- plan processes of intercultural learning and working.
- understand the interdependencies of culture and ethics.
- independently work on a case study on intercultural competence.

Contents

1. Basics of Intercultural and Ethical Competence to Act
    - 1.1 Subject Areas, Terms, and Definitions
    - 1.2 Relevance of Intercultural and Ethical Action
    - 1.3 Intercultural Action - Diversity, Globalization, Ethics
2. Cultural Concepts
    - 2.1 Hofstedes Cultural Dimensions
    - 2.2 Culture Differentiation According to Hall
    - 2.3 Locus of Control Concept to Rotter

3. Culture and Ethics
   - 3.1 Ethics - Basic Terms and Concepts
   - 3.2 Interdependence of Culture and Ethics
   - 3.3 Ethical Concepts in Different Regions of the World

4. Current Topics in the Area of Interculturality, Ethics, and Diversity
   - 4.1 Digital Ethics
   - 4.2 Equality and Equal Opportunities
   - 4.3 Social Diversity

5. Intercultural Learning and Working
   - 5.1 Acculturation
   - 5.2 Learning and Working in Intercultural Groups
   - 5.3 Strategies for Dealing with Cultural Conflicts

6. Case Studies for Cultural and Ethical Conflicts
   - 6.1 Case Study: Interculturality
   - 6.2 Case Study: Diversity
   - 6.3 Case Study: Interculturality and Ethics

Literature

Compulsory Reading

Further Reading

- Al-Ali, E., & Masmoudi, M. (2023). Leadership and Workplace Culture in the Digital Era. Business Science Reference.
- Barmeyer, C., Bausch, M., & Mayrhofer, U. (2021). Constructive Intercultural Management.
- Berrones-Flemmig, N., Contreras, F., & Dornberger, U. (2022). Business in the 21st century: A sustainable approach (1st ed.). Emerald Publishing Limited.
- Rossouw, J., & Van Vuuren, L. (2017). Business ethics (6th ed.). Oxford University Press Southern Africa.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Collaborative Work

Module Code: DLBCSCW

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	150 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator
Prof. Dr. Karin Halbritter (Collaborative Work)
Information about the Module Coordinator without guarantee

Contributing Courses to Module
▪ Collaborative Work (DLBCSCW01)

Module Exam Type	
Module Exam Study Format: myStudies Oral Assignment Study Format: Duales myStudium Oral Assignment Study Format: Distance Learning Oral Assignment	**Split Exam**
Weight of Module see curriculum	

Module Contents

- Self-Directed and Collaborative Learning
- Networking and Cooperation
- Performance in (Virtual) Teams
- Communication, Arguments, and Being Convincing
- Potentials for Conflict and Managing Conflicts
- Self-Management and Personal Skills

Learning Outcomes

Collaborative Work

On successful completion, students will be able to

- design their own learning processes both self-directed and collaborative with analog and digital media.
- initiate face-to-face and virtual cooperation and select suitable methods for shaping collaboration even in an intercultural context and across disciplinary boundaries.
- assess different forms of communication in relation to the goals and requirements of different situations and to reflect on their own communication and argumentation behavior in order to be able to shape conducive collaboration also in an interdisciplinary context.
- recognize social diversity including cultural and professional differences as a value, and to name and apply tools to deal with them constructively.
- explain conflict potentials and the role of emotions in conflicts and to describe the use of systemic methods in the target- and solution-oriented handling of conflicts.
- analyze one's own resources, present methods of self-leadership and self-motivation, and derive appropriate strategies.

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
This module is similar to other modules in the field of Business Administration & Management	All Bachelor Programs in the Business field

Collaborative Work

Course Code: DLBCSCW01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	none

Course Description

The course supports the students in building up and expanding important interdisciplinary competences for our networked world, and in doing so, students can take advantage of the opportunities for constructive cooperation with others. It presents essential forms and design possibilities of collaborative learning and working, imparts basic knowledge and tools for self-managed, flexible, and creative thinking, learning and acting and familiarizes students with the topics of empathy and emotional intelligence. Students are also encouraged to use the course contents. In this way, they promote their autonomous competence to act and their competence in the interactive application of tools and in interacting in heterogeneous groups.

Course Outcomes

On successful completion, students will be able to

- design their own learning processes both self-directed and collaborative with analog and digital media.
- initiate face-to-face and virtual cooperation and select suitable methods for shaping collaboration even in an intercultural context and across disciplinary boundaries.
- assess different forms of communication in relation to the goals and requirements of different situations and to reflect on their own communication and argumentation behavior in order to be able to shape conducive collaboration also in an interdisciplinary context.
- recognize social diversity including cultural and professional differences as a value, and to name and apply tools to deal with them constructively.
- explain conflict potentials and the role of emotions in conflicts and to describe the use of systemic methods in the target- and solution-oriented handling of conflicts.
- analyze one's own resources, present methods of self-leadership and self-motivation, and derive appropriate strategies.

Contents

1. Learning for a Networked World, in a Networked World
    - 1.1 Requirements and Opportunities in the “VUCA” World
    - 1.2 Learning, Knowing and Not-Knowing
    - 1.3 The 4C Model: Collective, Collaborative, Continuous, and Connected
    - 1.4 Monitoring Learning Behaviour

2. Networking & Cooperation
   - 2.1 Cooperation Partners
   - 2.2 Sustainable Relationships: Digital Interaction and Trust Building
   - 2.3 Organizing Collaboration
   - 2.4 Social Learning

3. Performance in (Online) Teams
   - 3.1 Goals, Roles, Organization and Performance Measurement
   - 3.2 Team Building and Team Flow
   - 3.3 Agile Project Management with Scrum
   - 3.4 Other Agile Methods

4. Communicating and Convincing
   - 4.1 Communication as Social Interaction
   - 4.2 Language, Images, Metaphors, and Stories
   - 4.3 Attitude: Open, Empathetic, and Appreciative Communication
   - 4.4 Active Listening
   - 4.5 Analyze Your Conversational and Argumentative Skills

5. Recognizing Conflict Potential — Managing Conflicts — Negotiating Effectively
   - 5.1 Respecting Diversity and Seizing Opportunities
   - 5.2 Empathy
   - 5.3 Systemic Solution Process Work
   - 5.4 Constructive Negotiation

6. Achieving Your Goals
   - 6.1 Effective Goal Setting
   - 6.2 The Agile Use of Time
   - 6.3 (Self-)Coaching Methods
   - 6.4 Self-Management and Motivation Strategies

7. Mobilizing Resources
   - 7.1 Recognizing Resources
   - 7.2 Reflection and Innovation
   - 7.3 Transfer Strength and Willpower

Literature
Compulsory Reading
Further Reading ▪ Baber, A., Waymon, L., Alphonso, A., & Wylde, J. (2015). Strategic connections: The new face of networking in a collaborative world. AMACOM. ▪ Kaats, E., & Opheij, W. (2014). Creating conditions for promising collaboration: Alliances, networks, chains, strategic partnerships. Springer. ▪ Martin, S. J., Goldstein, N. J., & Cialdini, R. B. (2014). The small BIG: Small changes that spark BIG influence. Profile Books. ▪ Oettingen, G. (2014). Rethinking positive thinking: Inside the new science of motivation. Current.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Duales myStudium

Study Format	Course Type
Duales myStudium	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

Tutorial Support
- ☑ Course Feed
- ☑ Intensive Live Sessions/Learning Sprint
- ☑ Recorded Live Sessions

Learning Material
- ☑ Course Book
- ☑ Video
- ☑ Slides

Exam Preparation
- ☑ Online Tests
- ☑ Guideline

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** yes
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed	☑ Course Book	☑ Online Tests
☑ Intensive Live Sessions/Learning Sprint	☑ Video	☑ Guideline
☑ Recorded Live Sessions	☑ Slides	

Practical Project: Industrial Engineering

Module Code: DLBWINWPWIN_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	10	300 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Dorian Mora (Practical Project: Industrial Engineering)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Practical Project: Industrial Engineering (DLBWINWPWIN01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Internship Reflection Paper (passed / not passed)	

Weight of Module

see curriculum

Module Contents

The Practical Project: Industrial Engineering 4.0 offers students the opportunity to gain practical experience in the field of industrial engineering, based on the subject-specific study components in industrial engineering. For this purpose, a tangible or digital result is to be created in collaboration with a company, for example a product prototype, a tool or software. The result should be able to solve an existing practical problem of the company.

Learning Outcomes

Practical Project: Industrial Engineering

On successful completion, students will be able to

- identify relevant problems from the professional environment of an industrial engineer in a company and explain them to an interested audience,
- apply established procedures to find a (prototypical) solution to the problem,
- find relevant concepts or technologies for the solution and integrate them appropriately,
- evaluate the result in terms of its suitability for solving the practical problem,present the problem, the solution and the way to get there in a comprehensible and descriptive way.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology fields

Practical Project: Industrial Engineering

Course Code: DLBWINWPWIN01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		10	none

Course Description

In the course of the study program, a variety of different concepts, methods and techniques were introduced that are relevant to the professional practice of an industrial engineer. The practical project offers the opportunity to use the accumulated knowledge and skills to solve a relevant problem of a company independently and on one's own responsibility. The result should be the creation of hardware or software (or a combination of both) that can demonstrate, at least in the sense of a proof-of-concept or a prototype, how the practical problem can be solved.

Course Outcomes

On successful completion, students will be able to

- identify relevant problems from the professional environment of an industrial engineer in a company and explain them to an interested audience,
- apply established procedures to find a (prototypical) solution to the problem,
- find relevant concepts or technologies for the solution and integrate them appropriately,
- evaluate the result in terms of its suitability for solving the practical problem,present the problem, the solution and the way to get there in a comprehensible and descriptive way.

Contents

- At the beginning of the practical project, the students look for a company that agrees to cooperate accordingly (in all formal matters such as confidentiality agreements or blocking notes, the students are advised in the tutorial and by the examination office). In consultation with the company and the tutor, the students select a concrete task that (a) can be derived from a company-specific problem, (b) can be processed with the available time and technical resources. Possible problems and use cases can be found, for example, in the areas of sustainability, smart factory, robotics, smart home, electromobility, autonomous driving, human-machine interaction, data analytics, robotic process automation, or digital business models. The students ideally work on the task in a working environment provided by the company. To complete the task, the students apply the concepts, methods and tools taught throughout the curriculum. They write down their result in the form of a simple practical reflection. The result is evaluated in terms of its suitability for solving the previously selected problem. Aspects such as complexity, creativity and practical relevance play a role.

Literature
Compulsory Reading
Further Reading ▪ Bangemann, Thomas; Riedl, Matthias; Thron, Mario; Diedrich, Christian (2016): Integration of Classical Components Into Industrial Cyber–Physical Systems. In: Proc. IEEE 104 (5), S. 947–959. ▪ Harrison, Robert; Vera, Daniel; Ahmad, Bilal (2016): Engineering Methods and Tools for Cyber–Physical Automation Systems. In: Proc. IEEE 104 (5), S. 973–985. ▪ Kelley, T./ Kelley, D. (2013): Creative Confidence: Unleashing the Creative Potential Within Us All. Crown Publishing, New York. ▪ Meinel, C.; Weinberg, U.; Krohn, T. (Eds.) (2015): Design Thinking Live. How to develop ideas and solve problems. Murmann Publishers, Hamburg.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Internship Reflection Paper (passed / not passed)

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
0 h	0 h	0 h	0 h	300 h	300 h

Instructional Methods		
Tutorial Support	**Learning Material**	**Exam Preparation**
☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint	☑ Slides	☑ Guideline

Project: Hackathon

Module Code: DLBWINWPH_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	10	300 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Dorian Mora (Project: Hackathon)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Project: Hackathon (DLBWINWPH01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Oral Project Report	

Weight of Module

see curriculum

Module Contents

The Project: Hackathon offers students the opportunity to gain practical experience in the field of industrial engineering based on the subject-specific study components in industrial engineering. For this purpose, a tangible or digital result is to be created, for example a product prototype, a tool or a software. The result should be able to solve an existing problem from practice.

Learning Outcomes

Project: Hackathon

On successful completion, students will be able to

- identify relevant problems from the professional environment of an industrial engineer and explain it to an interested audience,
- apply established procedures to find a (prototypical) solution to the problem,
- find relevant concepts or technologies for the solution and integrate them appropriately,
- evaluate the result with respect to its suitability for solving the practical problem,
- present the problem, the solution and the way to get there in a comprehensible and descriptive way.

Links to other Modules within the Study Program	Links to other Study Programs of the University
This module is similar to other modules in the field of Engineering	All Bachelor Programs in the IT & Technology fields

Project: Hackathon

Course Code: DLBWINWPH01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		10	none

Course Description

In the course of the study program, a variety of different concepts, methods and techniques were introduced that are relevant to the professional practice of an industrial engineer. The Hackathon offers the opportunity to use the accumulated knowledge and skills to solve a relevant practical problem independently and on one's own responsibility. The result should be the creation of hardware or software (or a combination of both) that can demonstrate, at least in terms of a proof-of-concept or prototype, how the practical problem can be solved. The problem and the result are to be made available to other students on a platform provided for this purpose.

Course Outcomes

On successful completion, students will be able to

- identify relevant problems from the professional environment of an industrial engineer and explain it to an interested audience,
- apply established procedures to find a (prototypical) solution to the problem,
- find relevant concepts or technologies for the solution and integrate them appropriately,
- evaluate the result with respect to its suitability for solving the practical problem,
- present the problem, the solution and the way to get there in a comprehensible and descriptive way.

Contents

- At the beginning of the Hackathon the students choose a concrete task in coordination with the tutor. The task shall be derived from a relevant practical problem. Possible problems and use cases can be found, for example, in the areas of sustainability, smart factory, robotics, smart home, electromobility, autonomous driving, human-machine interaction, data analytics, robotic process automation or digital business models. Students work on the task with the help of a prototyping environment that fits the subject of the task. The environments can be hardware (e.g. prototyping boards such as the Arduino) or software (e.g. technology-specific development environments such as Matlab or Eclipse IDE). To complete the task, students apply the concepts, methods and tools taught throughout the curriculum. They present their result in the form of a project presentation. In addition, the students are asked to publish the result together with the underlying problem and the chosen solution on a platform so that it is visible to other students. The result is evaluated in terms of its suitability to solve the previously selected problem. Aspects such as complexity, creativity and practical relevance play a role.

Literature
Compulsory Reading
Further Reading ▪ Anderson, C. (2013): Makers - The Internet of Things: The next industrial revolution. Carl Hanser, Munich. ▪ Kelley, T./ Kelley, D. (2013): Creative Confidence: Unleashing the Creative Potential Within Us All. Crown Publishing, New York. ▪ Meinel, C./ Weinberg, U./ Krohn, T. (eds.) (2015): Design Thinking Live. How to create ideas develops and solves problems. Murmann Publishers, Hamburg. ▪ Monk, S, (2018): Programming Arduino Next Steps: Going Further with Sketches, Second Edition. McGraw-Hill Education TAB

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Oral Project Report

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
240 h	0 h	60 h	0 h	0 h	300 h

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

Bachelor Thesis

Module Code: DLBBT

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	10	300 h

Semester / Term	Duration	Regularly offered in	Language of Instruction and Examination
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Degree Program Advisor (SGL) (Bachelor Thesis) / Degree Program Advisor (SGL) (Colloquium)

Information about the Module Coordinator without guarantee

Contributing Courses to Module

- Bachelor Thesis (DLBBT01)
- Colloquium (DLBBT02)

Module Exam Type

Module Exam	Split Exam
	Bachelor Thesis • Study Format "myStudies": Bachelor Thesis • Study Format "Distance Learning": Bachelor Thesis Colloquium • Study Format "myStudies": Colloquium • Study Format "Distance Learning": Colloquium

Weight of Module

see curriculum

Module Contents

Bachelor Thesis

- Bachelor's thesis
- Colloquium on the bachelor's thesis

Colloquium

Learning Outcomes

Bachelor Thesis

On successful completion, students will be able to

- work on a problem from their major field of study by applying the specialist and methodological skills they have acquired during their studies.
- independently analyze selected tasks with scientific methods, critically evaluate them, and develop appropriate solutions under the guidance of an academic supervisor.
- record and analyze existing (research) literature appropriate to the topic of their bachelor's thesis.
- prepare a detailed written elaboration in compliance with scientific methods.

Colloquium

On successful completion, students will be able to

- present a problem from their field of study using academic presentation and communication techniques.
- reflect on the scientific and methodological approach chosen in their bachelor's thesis.
- demonstrate that they can actively answer subject-related questions from the subject experts (reviewers of the bachelor’s thesis).

Links to other Modules within the Study Program	**Links to other Study Programs of the University**
All modules in the Bachelor program	All Bachelor Programs in distance learning

Bachelor Thesis

Course Code: DLBBT01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		9	none

Course Description

The aim and purpose of the bachelor's thesis is to successfully apply the subject-specific and methodological competencies acquired during the course of study in the form of an academic dissertation with a thematic reference to the major field of study. The content of the bachelor's thesis can be a practical-empirical or theoretical-scientific problem. Students should prove that they can independently analyze a selected problem with scientific methods, critically evaluate it, and work out proposed solutions under the subject-methodological guidance of an academic supervisor. The topic chosen by the student from their respective field of study should meet the acquired scientific competences, deepening their academic knowledge and skills in order to meet the future needs of the field.

Course Outcomes

On successful completion, students will be able to

- work on a problem from their major field of study by applying the specialist and methodological skills they have acquired during their studies.
- independently analyze selected tasks with scientific methods, critically evaluate them, and develop appropriate solutions under the guidance of an academic supervisor.
- record and analyze existing (research) literature appropriate to the topic of their bachelor's thesis.
- prepare a detailed written elaboration in compliance with scientific methods.

Contents

- The bachelor's thesis must be written on a topic that relates to the content of the respective major field of study. In the context of the bachelor's thesis, the problem, as well as the scientific research goal, must be clearly emphasized. The work must reflect the current state of knowledge of the topic to be examined by means of an appropriate literature analysis. The student must prove their ability to use the acquired knowledge theoretically and/or empirically in the form of an independent and problem-solution-oriented application.

Literature
Compulsory Reading
Further Reading ▪ Lipson, C. (2018). How to write a BA thesis. A practical guide from your first ideas to your finished paper (2nd ed.). University of Chicago Press. ▪ Turabian, K. L. (2013). A Manual for Writers of Research Papers, theses, and dissertations (8th ed.). University of Chicago Press. ▪ Selection of literature according to topic

Study Format myStudies

Study Format	Course Type
myStudies	Thesis Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Bachelor Thesis

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
270 h	0 h	0 h	0 h	0 h	270 h

Instructional Methods

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Thesis Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Bachelor Thesis

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
270 h	0 h	0 h	0 h	0 h	270 h

Instructional Methods

Colloquium

Course Code: DLBBT02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		1	none

Course Description

The colloquium will take place after the submission of the bachelor's thesis. This is done at the invitation of the experts. During the colloquium, students must prove that they have independently produced the content and results of the written work. The content of the colloquium is a presentation of the most important work contents and research results by the student as well as the answering of questions by experts.

Course Outcomes

On successful completion, students will be able to

- present a problem from their field of study using academic presentation and communication techniques.
- reflect on the scientific and methodological approach chosen in their bachelor's thesis.
- demonstrate that they can actively answer subject-related questions from the subject experts (reviewers of the bachelor's thesis).

Contents

- The colloquium includes a presentation of the most important results of the bachelor's thesis, followed by the student answering the reviewers' technical questions.

Literature

Compulsory Reading

Further Reading

- Subject specific literature chosen by the student

Study Format myStudies

Study Format	Course Type
myStudies	Thesis Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Colloquium

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
30 h	0 h	0 h	0 h	0 h	30 h

Instructional Methods

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Thesis Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Colloquium

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
30 h	0 h	0 h	0 h	0 h	30 h

Instructional Methods