MODULE HANDBOOK

Bachelor of Arts

Bachelor Digital Business (FS-BADBE)

180 ECTS

Distance Learning

INTERNATIONAL
UNIVERSITY OF
APPLIED SCIENCES

Classification: Undergraduate

Contents

1. Semester

Module DLBBAB_E: Business 101
Module Description 11
Course DLBBAB01_E: Business 101 13

Module DLBDBDFC_E: Digital Future Commerce
Module Description 17
Course DLBLOGC201_E: Digital Future Commerce 19

Module DLBCSIAW: Introduction to Academic Work
Module Description 23
Course DLBCSIAW01: Introduction to Academic Work 25

Module DLBINGEIT_E: Introduction to the Internet of Things
Module Description 31
Course DLBINGEIT01_E: Introduction to the Internet of Things 33

Module DLBBWME_E: Managerial Economics
Module Description 37
Course DLBBWME01_E: Managerial Economics 39

Module IGIS_E: Software Engineering Principles
Module Description 45
Course IGIS01_E: Software Engineering Principles 47

2. Semester

Module DLBEPEAB: Accounting and Balancing
Module Description 57
Course DLBEPEAB01: Accounting and Balancing 59

Module DLBLODB_E: Digital Business Models
Module Description 65
Course DLBLODB01_E: Digital Business Models 67

Module DLBCSIDM: Intercultural and Ethical Decision-Making
Module Description 71
Course DLBCSIDM01: Intercultural and Ethical Decision-Making 73

Module DLBDSEIMB1: International Marketing
Module Description 77
Course DLBDSEIMB01: International Marketing 79

Module DLBCSRE: Requirements Engineering
Module Description 85
Course DLBCSRE01: Requirements Engineering 87

Module DLBCSIDPITS: Introduction to Data Protection and Cyber Security
Module Description 93
Course DLBCSIDPITS01: Introduction to Data Protection and Cyber Security 95

---

3. Semester

Module DLBDSSPDS-01: Statistics: Probability and Descriptive Statistics
Module Description 103
Course DLBDSSPDS01-01: Statistics: Probability and Descriptive Statistics 105

Module DLBCSCW: Collaborative Work
Module Description 109
Course DLBCSCW01: Collaborative Work 111

Module DLBMAE: Management Accounting
Module Description 117
Course DLBMAE01: Management Accounting 119

Module DLBCSDMDS: Database Modeling and Database Systems
Module Description 125
Course DLBCSDMDS01: Database Modeling and Database Systems 127

Module DLBMSM1-01_E: Online Marketing
Module Description 133
Course DLBMSM01-01_E: Online Marketing 135

Module DLBCSAPM: Agile Project Management
Module Description 141
Course DLBCSAPM01: Agile Project Management 143

---

4. Semester

Module DLBCSM1: Mathematics I
Module Description 151
Course DLBCSM101: Mathematics I 153

Module DLBINGDABD_E: Data Analytics and Big Data
Module Description 157
Course DLBINGDABD01_E: Data Analytics and Big Data 159

Module DLBDBSC_E: Statistical Computing
Module Description 165
Course DLBDBSC01_E: Statistical Computing 167

Module DLBDBDL_E: Deep Learning
Module Description 171
Course DLBDBDL01_E: Deep Learning 173

Module DLBCSEBI1: Business Intelligence
Module Description 177
Course DLBCSEBI01: Business Intelligence 179

Module DLBCSEBI2: Project: Business Intelligence
Module Description 183
Course DLBCSEBI02: Project: Business Intelligence 185

5. Semester

Module DLBINGPE_E: Product Development in Industry 4.0
Module Description 193
Course DLBINGPE01_E: Product Development in Industry 4.0 195

Module DLBDBATD_E: Seminar in Current Topics in Digitalization
Module Description 201
Course DLBDBATD01_E: Seminar in Current Topics in Digitalization 203

Module DLBCFIE: Corporate Finance and Investment
Module Description 207
Course DLBCFIE01: Corporate Finance and Investment 209

Module DLBINGDT_E: Project: Design Thinking
Module Description 215
Course DLBINGDT01_E: Project: Design Thinking 217

Module DLBIEPSPS: Project: Smart Product Solutions
Module Description 221
Course DLBIEPSPS01: Project: Smart Product Solutions 223

Module DLBDBCM_E: Change Management
Module Description 227

Course DLBDBCM01_E: Change Management 229

6. Semester

Module DLBBAEMPFB_E: Managing People and Fundamentals of Business Psychology
Module Description 237
Course DLBNWENW01_E: Introduction to New Work 240
Course DLBMPS01_E: Business Psychology 244

Module DLBDSEAS: Applied Sales
Module Description 249
Course DLBDSEAS01: Applied Sales I 252
Course DLBDSEAS02: Applied Sales II 257

Module IWSM-01_E: IT Service Management
Module Description 263
Course DLBCSITSM01-01: IT Service Management 265
Course DLBCSPITSM01: Project: IT Service Management 269

Module DLBBUEFPP: Foundations of Programming with Python
Module Description 273
Course DLBDSIPWP01: Introduction to Programming with Python 275
Course DLBDSOOFPP01: Object oriented and functional programming in Python 279

Module DLBDBECSC : Computer Science and Cryptography
Module Description 283
Course DLBCSICS01: Introduction to Computer Science 286
Course DLBCSCT01: Cryptography 291

Module DLBCSEBDCT: Big Data and Cloud Technologies
Module Description 297
Course DLBDSBDT01: Big Data Technologies 299
Course DLBDSCC01: Cloud Computing 303

Module DLBCSEITPAM: IT project and architecture management
Module Description 307
Course DLBCSEITPAM01: IT Project Management 310
Course DLBCSEITPAM02: IT Architecture Management 314

Module DLBDSESCM: Supply Chain Management
Module Description 319
Course DLBDSESCM01: Supply Chain Management I 322
Course DLBDSESCM02: Supply Chain Management II 326

Module DLBEPWSEP_E: Sustainable Entrepreneurship
Module Description 331
Course DLBBAS01_E: Sustainability 334
Course DLBEPWSEP01_E: Project: Sustainable Entrepreneurship 338

Module DLBEPWITN_E: Innovative Technologies and Sustainability
Module Description 341
Course DLBEPWITN01_E: Circular Economy 343
Course DLBEPWITN02_E: Sustainable Technologies 347

Module DLBEPWWEN_E: Business Ethics and Sustainability
Module Description 351
Course DLBLONQM01_E: Sustainability and Quality Management 354
Course BETH01_E: Business Ethics 358

Module DLBINGSS_E: Smart Services
Module Description 361
Course DLBINGSS01_E: Smart Services I 363
Course DLBINGSS02_E: Smart Services II 367

Module DLBINGSM_E: Smart Mobility
Module Description 369
Course DLBINGSM01_E: Smart Mobility I 371
Course DLBINGSM02_E: Smart Mobility II 375

Module DLBSG_E: Studium Generale
Module Description 377
Course DLBSG01_E: Studium Generale I 379
Course DLBSG02_E: Studium Generale II 381

Module DLSFPM: Salesforce Platform Management
Module Description 383
Course DLSFPM01: Salesforce Fundamentals 385
Course DLSFPM02: CRM with Salesforce Service Cloud 387

Module DLSFPD: Salesforce Platform Development
Module Description 389
Course DLSFPD01: Salesforce Platform App Builder 391
Course DLSFPD02: Salesforce Platform Developer 394

Module DLBWPLS_E: Leadership 4.0
Module Description 397
Course DLBWPLS01_E: Leadership 4.0 399

Module DLBBAEI_E: Entrepreneurship and Innovation

Module Description 405
Course DLBBAEI01_E: Entrepreneurship and Innovation 407

Module DLBBT: Bachelor Thesis
Module Description 411
Course DLBBT01: Bachelor Thesis 413
Course DLBBT02: Colloquium 417

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)

Contributing Courses to Module

- Business 101 (DLBBAB01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam or Written Assessment: Written Assignment, 90 Minutes Study Format: Distance Learning Exam or Written Assessment: Written Assignment, 90 Minutes	

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 fields of Business Administration & Management	All Bachelor Programmes in the Business & Management fields

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

- Collins, J. (2011). Good to great: Why some companies make the leap...and others don't. Harper Business.
- Covey, S., Foreword, C. J.-, Covey, S. R. & Audio, S. S. (2020). The 7 Habits of Highly Effective People: 30th Anniversary Edition . Simon & Schuster Audio.
- Miller, J. (2004). QBQ! The question behind the question. Penguin.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ 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

Bernhard Wecke (Digital Future Commerce)

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	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBLOGC201_E

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. Maya Stagge (Introduction to Academic Work)

Contributing Courses to Module

- Introduction to Academic Work (DLBCSIAW01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Basic Workbook (passed / not passed) Study Format: Distance Learning Basic Workbook (passed / not passed)	

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 Programmes in the Business & Management 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	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ 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)

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 fields of Computer Science & Software	All Bachelor Programmes in the IT & Technology fields

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	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ 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

Prof. Dr. Andreas Simon (Managerial Economics)

Contributing Courses to Module

- Managerial Economics (DLBBWME01_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

- 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 Programmes in the Business & Management fields

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

3. Consumer Decisions
   3.1 Utility Theory
   3.2 Willingness to Pay
   3.3 Demand
   3.4 Applications

4. Business Decisions I: Full Competition
   4.1 Production
   4.2 Costs
   4.3 Supply
   4.4 Applications

5. Business Decisions II: Partial Competition
   5.1 Monopoly
   5.2 Monopolistic Competition
   5.3 Oligopoly

6. Business Decisions III: Game Theory
   6.1 Methodology
   6.2 Simultaneous Games
   6.3 Sequential Games

7. Advanced Microeconomics
   7.1 Information Economics
   7.2 Behavioural Economics

Literature
Compulsory Reading
Further Reading ▪ Acemoglu, D., Laibson, & D., List, J. A. (2018). Microeconomics, Global edition (2nd ed.). Pearson. ▪ Case, K. E., Osten, S. M., & Fair, R. C. (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. ▪ Mankiw, N. G. (2017). Principles of economics (8th ed.). Cengage Learning. ▪ Pindyck, R. S., & Rubinfeld, D. L. (2017). Microeconomics (9th ed.). Pearson. ▪ Parkin, M. (2019). Economics (13th ed.). Harlow.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBBWME01_E

Software Engineering Principles

Module Code: IGIS_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. Sandra Rebholz (Software Engineering Principles)

Contributing Courses to Module

- Software Engineering Principles (IGIS01_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

- binary system
- Structure and function of computer systems
- Structure and function of communication networks
- Software life cycle
- Roles, phases, activities in software engineering

Learning Outcomes

Software Engineering Principles

On successful completion, students will be able to

- perform simple calculations in the binary system (Boolean algebra).
- describe the structure of computer systems and communication networks.
- distinguish between the phases of a SW life cycle.
- distinguish roles and phases in the software process.
- know different process models of SW development.
- know typical challenges and risks of enterprise SW development.
- know different programming paradigms and their 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 fields of Computer Science & Software Development	All Bachelor Programs in the IT & Technology fields

Software Engineering Principles

Course Code: IGIS01_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 insight into the technical and theoretical basics of software engineering. In addition to the general structure of computer systems, students are taught typical challenges in the development of enterprise information systems. Furthermore, the typical phases and activities in software engineering are presented to address these risks.

Course Outcomes

On successful completion, students will be able to

- perform simple calculations in the binary system (Boolean algebra).
- describe the structure of computer systems and communication networks.
- distinguish between the phases of a SW life cycle.
- distinguish roles and phases in the software process.
- know different process models of SW development.
- know typical challenges and risks of enterprise SW development.
- know different programming paradigms and their application.

Contents

1. Structure and organization of information systems
   - 1.1 0 and 1 as the basis of all IT systems
   - 1.2 Von Neumann Architecture
   - 1.3 Distributed systems and communication networks
   - 1.4 Enterprise information systems

2. Risks and challenges of enterprise software engineering
   - 2.1 Properties of enterprise software systems
   - 2.2 Software Engineering
   - 2.3 Risks and typical problems
   - 2.4 Root cause analysis
   - 2.5 Challenges in Software Engineering

3. Software life cycle: from planning to replacement
   - 3.1 The software life cycle at a glance
   - 3.2 Planning
   - 3.3 Development
   - 3.4 Operation
   - 3.5 Maintenance
   - 3.6 Shutdown

4. Requirements engineering and specification
   - 4.1 requirements engineering
   - 4.2 Specification

5. Architecture and implementation
   - 5.1 Architecture
   - 5.2 Implementation

6. Testing, operation and evolution
   - 6.1 Testing
   - 6.2 Operation
   - 6.3 Evolution

7. Roles in Software Engineering
   - 7.1 Idea of the role-based approach
   - 7.2 Typical roles

8. Organization of software projects
   - 8.1 From process paradigm towards software process
   - 8.2 Process Paradigms

9. Software Process Frameworks
   - 9.1 V-model XT
   - 9.2 Rational Unified Process (RUP)
   - 9.3 Scrum

Literature
Compulsory Reading
Further Reading ▪ Pohl, K., & Rupp., C. (2015). Requirements engineering (2nd ed.). Rocky Nook. ▪ Sommerville, I. (2016). Software engineering (10th ed.). Pearson. ▪ Sommerville, I. (2019). Engineering software products: An introduction to modern software engineering. Pearson. ▪ Jacobson, I., Lawson, H., & Ng, P.-W. (2019). The essentials of modern software engineering. ACM Books.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

IGIS01_E

2. Semester

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)

Contributing Courses to Module

- Accounting and Balancing (DLBEPEAB01)

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

- 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 & Management 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. ProQuest Ebook Central. https://ebookcentral-proquest-com.pxz.iubh.de:8443/lib/badhonnef/detail.action?docID=5186889. ▪ Stittle, John, and Robert T Wearing (2008): Financial Accounting. SAGE Publications. ProQuest Ebook Central. https://ebookcentral-proquest-com.pxz.iubh.de:8443/lib/badhonnef/detail.action?docID=420915. ▪ Van, Horne, J., et al. (2008): Fundamentals of Financial Management. Pearson Education, Limited. ProQuest Ebook Central. https://ebookcentral-proquest-com.pxz.iubh.de:8443/lib/badhonnef/detail.action?docID=5833605.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☑ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☑ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBEPEAB01

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. Mario Boßlau (Digital Business Models)

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 fields	All Bachelor Programmes in the Business & Management fields

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., & Csik, M. (2014). The business model navigator: 55 models thatwill revolutionise your business. FT Publishing.
- Weil, P., & Woerner, S. L. (2013). Optimizing your digital business model. MIT Sloan ManagementReview, 54(3), 71—78.
- Weil, P., & Woerner, S. L. (2018). What's your digital business model? Six questions to help you tobuild the next-generation enterpreise. Harvard Business Review Press.

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☑ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☑ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

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. Jürgen Matthias Seeler (Intercultural and Ethical Decision-Making)

Contributing Courses to Module

- Intercultural and Ethical Decision-Making (DLBCSIDM01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Written Assessment: Case Study Study Format: Distance Learning Written Assessment: Case Study	

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 fields of Business Administration & Management	All Bachelor Programs in the Business & Management fields

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

- Boylan, M. (Eds.). (2014). Business ethics. (2nd ed.). Wiley-Blackwell.
- Thomas, A., Kinast, E. U., Schroll-Machl, S. (Eds.). (2010). Handbook of intercultural communication and cooperation. Basics and areas of application. Vandenhoeck & Ruprecht .

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☐ Exam Template	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☐ Exam Template	☑ Slides	

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

Caterina Fox (International Marketing)

Contributing Courses to Module

- International Marketing (DLBDSEIMB01)

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

- 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 fields of Marketing & Sales	All Bachelor Programmes in the Marketing & Communication fields

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
   3.2 Case Study: Bosch and Siemens Hausgeräte GmbH in China
   3.3 Case Study: Siemens Mobile in China
   3.4 Case Study: Siemens in China

4. International Product Management and Product Development
   4.1 Goals of International Product Management
   4.2 Framework Conditions for International Product Management
   4.3 International Product Decisions
   4.4 International Product Development

5. Exchange Rate Fluctuations and International Price Calculation
   5.1 Tasks and Objectives of International Price Management
   5.2 Factors Influencing International Price Management
   5.3 Instruments of International Price Management

6. International Communication and International Sales Policy
   6.1 International Communication Management
   6.2 International Sales Management

7. International Marketing and Ethics
   7.1 Overview of International Marketing and Ethics
   7.2 Business Ethics in International Companies
   7.3 Case Study: Nestlé

8. Applied Market Research and Its Influence on Consumer Behavior
   8.1 Scope of International Market Research
   8.2 Requirements for International Market Research Information
   8.3 International Secondary Research
   8.4 International Primary Research

9. Monitoring and Control in International Marketing
   9.1 Controlling in International Management

10. Six Sigma, Brand Management, and Rebranding
   10.1 Six Sigma: Basics, Definitions, and Processes
   10.2 Brand Management
   10.3 Rebranding

Literature
Compulsory Reading
Further Reading ▪ Armstrong, G., Kotler, P., & Opresnik, M. O. (2019). Marketing: An introduction (14th ed.). Pearson. ▪ Green, M. C., & Keegan, W. J. (2020). Global marketing (10th 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. ▪ Mooij, M. (2018). Global marketing and advertising: Understanding cultural paradoxes (5th ed.). Sage Publications.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBDSEIMB01

Requirements Engineering

Module Code: DLBCSRE

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. Tobias Brückmann (Requirements Engineering)

Contributing Courses to Module

- Requirements Engineering (DLBCSRE01)

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

- Basics of requirements engineering
- Enterprise modeling
- Requirement determination techniques
- Techniques of requirements documentation
- Testing and coordination of requirements
- Managing requirements

Learning Outcomes

Requirements Engineering

On successful completion, students will be able to

- describe models of enterprise modeling relevant to IT support and have experience in modeling.
- understand techniques and methods for determining requirements of IT systems and be able to distinguish them from each other.
- understand techniques for the documentation of requirements on IT systems and have experience in their use.
- describe techniques for testing, coordinating, and managing the requirements of IT systems and be able to distinguish between them.
- independently select suitable techniques and methods of requirements engineering for given project situations.

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(s) of Computer Science & Software Development.	All Bachelor Programmes in the IT & Technology field(s).

Requirements Engineering

Course Code: DLBCSRE01

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

Course Description

The early phases of software development are largely characterized by the fact that functional and technical requirements for the IT system have to be determined. The determination of these requirements must be carried out extremely carefully because all of the following activities in the SW development process are planned and executed on the basis of documented requirements. In this course, procedures, methods, and models are covered, which make it possible to have a structured and methodical determination and documentation of requirements for operational information systems.

Course Outcomes

On successful completion, students will be able to

- describe models of enterprise modeling relevant to IT support and have experience in modeling.
- understand techniques and methods for determining requirements of IT systems and be able to distinguish them from each other.
- understand techniques for the documentation of requirements on IT systems and have experience in their use.
- describe techniques for testing, coordinating, and managing the requirements of IT systems and be able to distinguish between them.
- independently select suitable techniques and methods of requirements engineering for given project situations.

Contents

1. Fundamentals and Terms of Requirements Engineering
   - 1.1 Requirements Engineering in the Software Process
   - 1.2 Core Activities in Requirements Engineering
   - 1.3 What is a Requirement?
2. Determination of Requirements
   - 2.1 Determination of the System Context
   - 2.2 Determination of the Sources of Requirements
   - 2.3 Selection of the Appropriate Investigative Techniques
   - 2.4 Determine Requirements Using Techniques

3. Selected Investigative Techniques
   - 3.1 Creativity Techniques
   - 3.2 Interview Techniques
   - 3.3 Observation Techniques
   - 3.4 Prototyping

4. Documentation of Requirements
   - 4.1 Activities for Documenting Requirements
   - 4.2 Typical Elements of Requirements Documentation
   - 4.3 Forms of Documentation

5. Modeling of Processes
   - 5.1 Basics and Terms
   - 5.2 Modeling with the Business Process Model and Notation
   - 5.3 Modeling with Event Driven Process Chains

6. Modeling of Systems
   - 6.1 Fundamentals of Unified Modeling Language
   - 6.2 UML Use Case Diagram
   - 6.3 UML Activity Diagram
   - 6.4 UML Class Diagram
   - 6.5 UML State Diagram

7. Checking and Reconciling Requirements
   - 7.1 Activities for Checking and Reconciling Requirements
   - 7.2 Test Criteria
   - 7.3 Test Principles
   - 7.4 Testing Techniques
   - 7.5 Coordination of Requirements

8. Management of Prioritization Requirements and Techniques
   - 8.1 Managing Requirements
   - 8.2 Techniques for Prioritizing Requirements

Literature
Compulsory Reading
Further Reading ▪ Dick, J., Hull, E., & Jackson, K. (2017). Requirements engineering (4th ed.). Springer. ▪ Glinz, M., van Loenhoud, H., Staal, S., & Bühne, S. (2020). Handbook for the CPRE foundation level according to the IREB standard: Education and training for certified professional for requirements engineering (CPRE): Foundation level (Version 1.0.0). International Requirements Engineering Board. ▪ Miles, R., & Hamilton, K. (2006). Learning UML 2.0: A pragmatic introduction to UML. O'Reilly. ▪ Pohl, K., & Rupp, C. (2015). Requirements engineering fundamentals: A study guide for the certified professional for requirements engineering exam: Foundation level—IREB compliant (2nd ed.). Rocky Nook. ▪ Silver, B. (2017). BPMN quick and easy using method and style: Process mapping guidelines and examples using the business process modeling standard. Cody-Cassidy Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBCSRE01

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)

Contributing Courses to Module

- Introduction to Data Protection and Cyber Security (DLBCSIDPITS01)

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 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(s) of Computer Science & Software Development.	All Bachelor Programmes in the IT & Technology field(s).

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.
- Mattord, H., & Whitman, M. (2017). Management of information security. Cengage.
- 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

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

3. Semester

Statistics: Probability and Descriptive Statistics

Module Code: DLBDSSPDS-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

Peter Anklam (Statistics: Probability and Descriptive Statistics)

Contributing Courses to Module

- Statistics: Probability and Descriptive Statistics (DLBDSSPDS01-01)

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

- Probability
- Random variables
- Joint distributions
- Expectation and variance
- Inequalities and limit theorems

Learning Outcomes

Statistics: Probability and Descriptive Statistics

On successful completion, students will be able to

- define probability, random variable, and probability distribution.
- understand the concept of Bayesian statistics.
- grasp the definition of joint and marginal distributions.
- calculate expectation values and higher moments.
- comprehend important inequality equations and limit theorems.

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 Programmes in the Business & Management fields

Statistics: Probability and Descriptive Statistics

Course Code: DLBDSSPDS01-01

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

Course Description

Statistical description and analysis are the foundations for data-driven analysis and prediction methods. This course introduces the fundamentals, beginning with a formal definition of probabilities and introduction to the concepts underlying Bayesian statistics.Random variables and probability density distributions are then discussed, as well as the concept of joint and marginal distributions. The importance of various discrete and continuous distributions and their applications is stressed.Characterizing distributions is an important aspect of describing the behavior of probability distributions. Students are familiarized with expectation values, variance, and covariance. The concepts of algebraic and central moments and moment-generating functions complement the characterization of probability distributions.Finally, this course focuses on important inequalities and limit theorems such as the law of large numbers or the central limit theorem.

Course Outcomes

On successful completion, students will be able to

- define probability, random variable, and probability distribution.
- understand the concept of Bayesian statistics.
- grasp the definition of joint and marginal distributions.
- calculate expectation values and higher moments.
- comprehend important inequality equations and limit theorems.

Contents

1. Probability
   - 1.1 Definitions
   - 1.2 Independent events
   - 1.3 Conditional probability
   - 1.4 Bayesian statistics
2. Random Variables
   - 2.1 Random Variables
   - 2.2 Distribution functions and probability mass functions
   - 2.3 Important discrete probability distributions
   - 2.4 Important continous probability distributions

3. Joint Distributions
   - 3.1 Joint distributions
   - 3.2 Marginal distributions
   - 3.3 Independent random variables
   - 3.4 Conditional distributions

4. Expectation and Variance
   - 4.1 Expectation of a random variable, conditional expectations
   - 4.2 Variance and covariance
   - 4.3 Expectations and variances of important probability distributions
   - 4.4 Algebraic and central moments
   - 4.5 Moment-generating functions

5. Inequalities and Limit Theorems
   - 5.1 Probability inequalities
   - 5.2 Inequalities for expectations
   - 5.3 The law of large numbers
   - 5.4 Central limit theorem

Literature

Compulsory Reading

Further Reading

- Downey, A.B. (2014). Think stats (2nd ed.). O'Reilly.
- Kim, A. (2019). Exponential Distribution - Intuition, Derivation, and Applications.
- Rohatgi, V. K., & Saleh, A. K. E. (2015). An introduction to probability and statistics. John Wiley & Sons, Incorporated.
- Wagaman, A.S & Dobrow, R.P. (2021). Probability: With applications and R. Wiley.
- Triola , M.F. (2013). Elementary statistics. Pearson Education.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☑ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☐ Guideline	
☑ Shortcast	☐ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☑ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☐ Guideline	
☑ Shortcast	☐ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

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)

Contributing Courses to Module

- Collaborative Work (DLBCSCW01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Oral Assignment Study Format: Distance Learning Oral Assignment	

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 fields of Business Administration & Management	All Bachelor Programmes in the Business & Management fields

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 networkingin a collaborative world. New York, NY: AMACOM. ▪ Hinnen, A. & Hinnen, G. (2018). Reframe it! 42 Werkzeuge und ein Modell, mit denen sie Komplexitätmeistern (2nd ed.). Hamburg, Germany: Murmann. ▪ Kaats, E., & Opheij, W. (2014). Creating conditions for promising collaboration: Alliances, networks, chains,strategic partnerships. Heidelberg, Germany: Springer. ▪ Martin, S. J., Goldstein, N. J., & Cialdini, R. B. (2014). The small BIG: Small changes that spark BIG influence.London, England: Profile Books. ▪ Oettingen, G. (2014). Rethinking positive thinking: Inside the new science of motivation. New York, NY:Current. ▪ Storch, M., & Kuhl, J. (2017). Die Kraft aus dem Selbst: Sieben PsychoGyms für das Unbewusste (3th ed.).Bern, Switzerland: Hogrefe. ▪ Storch, M., & Tschacher, W. (2016). Embodied Communication: Kommunikation beginnt im Körper, nicht imKopf. Bern, Switzerland: Hogrefe. ▪ Wenger, E. (1998). Communities of practice: Learning, meaning, and identity. Cambridge, England:Cambridge University Press.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes
Type of Exam	Oral Assignment

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes
Type of Exam	Oral Assignment

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

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. Muhammad Ashfaq (Management Accounting)

Contributing Courses to Module

- Management Accounting (DLBMAE01)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Exam or Written Assessment: Written Assignment, 90 Minutes Study Format: Distance Learning Exam or Written Assessment: Written Assignment, 90 Minutes	

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 fields of Finance & Tax Accounting	All Bachelor Programmes in the Business & Management fields

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
   - 3.1 Cost Behavior: Direct and Indirect Costs
   - 3.2 The Need for Cost Allocation
   - 3.3 Predetermined Overhead Rate
   - 3.4 Departmental Overhead Rate
   - 3.5 Over- and Under-Application of Overhead

4. Activity-Based Costing
   - 4.1 The Rationale of Activity-Based Costing
   - 4.2 Implementing Activity-Based Costing

5. Overhead Analysis Sheet
   - 5.1 Departmental Cost Allocation
   - 5.2 Reciprocal Method
   - 5.3 Step Method

6. Relevant Cost Concepts
   - 6.1 Foundational Cost Concepts
   - 6.2 Replacement of Equipment
   - 6.3 Make or Buy
   - 6.4 Special Order
   - 6.5 Drop Product Line

7. Operating Budgets
   - 7.1 The Budgeting Process
   - 7.2 Sales Budget
   - 7.3 Production Budgets
   - 7.4 Administrative Expense Budget
   - 7.5 Budgeted Income Statement

8. Financial Budgets
   - 8.1 Cash Budget
   - 8.2 Conflicts and Pitfalls in Budgeting

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	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBMAE01

Database Modeling and Database Systems

Module Code: DLBCSDMDS

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 (Database Modeling and Database Systems)

Contributing Courses to Module

- Database Modeling and Database Systems (DLBCSDMDS01)

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 relational databases
- Simple database queries
- Entity/Relationship (E/R) Diagrams
- database development
- Complex database queries across multiple tables
- Changing data in databases
- NoSQL database systems

Learning Outcomes

Database Modeling and Database Systems

On successful completion, students will be able to

- describe the basic concepts of the relational data model and distinguish them from each other.
- visually model data schemas.
- know SQL queries, read data from databases, change the data stock, and have experience in their use.
- design, create, and modify SQL queries and data schemas for SQL databases, and have experience using them.
- independently design database schemas and create database queries to solve concrete problems.
- know the most important NoSQL concepts and distinguish them from each other.

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(s) of Data Science & Artificial Intelligence	All Bachelor Programmes in the IT & Technology field(s).

Database Modeling and Database Systems

Course Code: DLBCSDMDS01

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

Course Description

Stored data form the basis of many value chains of an information and knowledge society. The methodical structuring of data through data schemas therefore forms an important basis for storing information in such a way that it can be retrieved and processed quickly and easily. In addition to the structured storage of data, structured access to large amounts of data must also be possible.This course teaches students how to store data in relational data models and how to access stored data with SQL. In addition to relational database systems, modern DB systems (NoSQL) for storing and accessing data will be presented.

Course Outcomes

On successful completion, students will be able to

- describe the basic concepts of the relational data model and distinguish them from each other.
- visually model data schemas.
- know SQL queries, read data from databases, change the data stock, and have experience in their use.
- design, create, and modify SQL queries and data schemas for SQL databases, and have experience using them.
- independently design database schemas and create database queries to solve concrete problems.
- know the most important NoSQL concepts and distinguish them from each other.

Contents

1. Fundamentals of Relational Databases
   - 1.1 Basic Concepts of the Relational Data Model
   - 1.2 Find and Delete Records in the Database
   - 1.3 SQL and Relational Database Systems

2. Querying Data from a Single Table
   - 2.1 Query Data (SELECT)
   - 2.2 Query Data With Condition (WHERE)
   - 2.3 Sort Query Output (ORDER BY)
   - 2.4 Queries With Group Formation (GROUP BY)
   - 2.5 Subqueries With Nested SELECT Statements

3. Conception and Modeling of Relational Databases
   - 3.1 The Entity Relationship Model
   - 3.2 Relationships and Cardinalities in E/R Models
   - 3.3 Normal Forms of Databases

4. Creation of Relational Databases
   - 4.1 Logical Database Design Activities
   - 4.2 Mapping of the Conceptual Data Model into the Physical Data Model
   - 4.3 Generation of Tables in SQL Databases from E/R Diagrams

5. Complex Database Queries on Multiple Tables
   - 5.1 Composite Quantities (JOIN)
   - 5.2 Set Operations
   - 5.3 Data Views With CREATE VIEW

6. Manipulating Records in Databases
   - 6.1 Insert New Data Records (INSERT)
   - 6.2 Change Existing Records
   - 6.3 Transactions

7. NoSQL Database Systems
   - 7.1 Motivation and Basic Idea
   - 7.2 Selected Groups of NoSQL Systems

Literature
Compulsory Reading
Further Reading ▪ 46th VLDB (2020). Proceedings of the International Conference on Very Large Data Bases (VLDB). ▪ Date, C.J. (2019). Database design and relational theory: Normal forms and all that jazz (2nd ed.). Apress. ▪ Documentation of Mondial Database (2010). Mondial Database. ▪ Elmasri, R., Navathe, S. B. (2016). Fundamentals of database systems. Pearson Education Limited. ▪ Foster, E., Godbole, S. (2016). Database systems. A pragmatic approach. (2nd ed.). Apress. ▪ Sumathi, S. et al (2010). Fundamentals of relational database management systems. Springer. ▪ W3Schools (2020). SQL Tutorial.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBCSDMDS01

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. Anne-Kristin Langner (Online Marketing)

Contributing Courses to Module

- Online Marketing (DLBMSM01-01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Written Assessment: Written Assignment Study Format: Distance Learning Written Assessment: Written Assignment	

Weight of Module

see curriculum

Module Contents

- Basics of Online Marketing
- Forms and Channels of Online Marketing
- Online Marketing Strategy
- Online Media Planning
- The Online Presence
- Mobile Marketing and M-Commerce
- Online law
- Online Customer Retention 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 fields of Online & Social Media Marketing	All Bachelor Programs in the Marketing & Communication fields

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 German Data Protection Ordinance (DSGVO) 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. Basics of Online Marketing
   - 1.1 Development and concept of Online Marketing
   - 1.2 The online communication process
   - 1.3 Added value of Online Marketing
   - 1.4 The role of Online Marketing in the Marketing Mix
   - 1.5 The electronic added value
   - 1.6 Electronic business concepts and platforms
   - 1.7 Current developments and trends

2. Forms and channels of Online Marketing
   - 2.1 Overview of the forms of Online Marketing
   - 2.2 Affiliate and Search Engine Marketing
   - 2.3 Display advertising and E-mail Marketing
   - 2.4 Social Media and Influencer Marketing
   - 2.5 Content Marketing and Storytelling
   - 2.6 Viral Marketing and Word-of-Mouth
   - 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 Setting goals and creating a basis
   - 3.2 The Customer Journey
   - 3.3 The adequate channel mix
   - 3.4 Define and analyze KPIs

4. Media planning online
   - 4.1 Principles of successful Media Planning
   - 4.2 Create and structure media budgets in a targeted manner
   - 4.3 Integrated campaigns and Cross-Media Marketing
   - 4.4 Successful media mix through campaign management

5. The Online Presence
   - 5.1 Website and web design
   - 5.2 Corporate Website
   - 5.3 Landing Page
   - 5.4 Blog
   - 5.5 Online Shop
   - 5.6 Online presentation and distribution of products and services - advantages and disadvantages

6. Mobile Marketing and M-Commerce
   - 6.1 Basics and classification of Mobile Marketing
   - 6.2 Responsive design vs. Apps vs. Mobile Web
   - 6.3 App and QR Code Marketing
   - 6.4 Location-based Services
   - 6.5 Mobile Advertising Media
   - 6.6 Mobile Commerce - definition and development
   - 6.7 Mobile Payment
   - 6.8 Success factors of mobile campaigns

7. Online law
   - 7.1 Legal aspects of Online Marketing
   - 7.2 Copyright law and the handling of user-generated content
   - 7.3 The right to your own image
   - 7.4 Basic Data Protection Ordinance (DSGVO)

8. Online Customer Retention and Service
   - 8.1 The AIDA model - extensions for Online Marketing
   - 8.2 Customer acquisition and customer retention in Online Marketing
   - 8.3 Online customer retention in the customer relationship life cycle
   - 8.4 Online customer service
   - 8.5 Excursus: Mass Customization

9. Web Analytics
   - 9.1 Key figures in Online Marketing
   - 9.2 Web Monitoring
   - 9.3 Big Data

Literature

Compulsory Reading

Further Reading

- Chaffey, D., & Ellis-Chadwick, F. (2022). Digital marketing (8th ed.). Pearson.
- Kingsnorth, S. (2022). The Digital Marketing Handbook. Deliver powerful digital campaigns. KoganPage, London.
- Martínez-López, F. J., & López López, D. (eds.) (2021). Advances in Digital Marketing and eCommerce. Second International, Conference, 2021. Springer Nature, Cham.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

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 (Agile Project Management)

Contributing Courses to Module

- 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

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 fields of Computer Science & Software Development	All Bachelor Programmes in the IT & Technology fields

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. (URL: https://www.agilealliance.org/agile101/subway-map-to-agile-practices/ [last accessed on 23.06.2021]). ▪ Beck, K. et al. (2001). Manifesto for Agile Software Development. (URL: https://agilemanifesto.org/ [last accessed on 23.06.2021]). ▪ Chovanova, H. et al. (2020). Agile Project Management – What is It?: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 ▪ 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. (URL: https://scrumguides.org/docs/scrumguide/v2020/2020-Scrum-Guide-US.pdf#zoom=100 [last accessed on 23.06.2021])

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

4. Semester

Mathematics I

Module Code: DLBCSM1

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. Veronica Mas (Mathematics I)

Contributing Courses to Module

- Mathematics I (DLBCSM101)

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 definitions and terms of discrete mathematics
- Sets and propositional logic
- Number systems such as decimal and binary systems
- Graphs and mappings
- Selected topics of elementary number theory
- Cryptography

Learning Outcomes

Mathematics I

On successful completion, students will be able to

- understand basic terms of discrete mathematics as well as describe them and distinguish them from each other.
- understand concepts of number theory and their application in IT and technology and be able to solve tasks independently by applying these concepts.

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(s) of Methods.	All Bachelor Programmes in the Business & Management field(s).

Mathematics I

Course Code: DLBCSM101

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

Course Description

Many practical concepts in IT and technology are based on the findings of discrete mathematics. For an in-depth understanding of, for example, data structures, the construction of communication networks, or of solutions to algorithmic problems, a basic understanding of their mathematical background is necessary. This course therefore introduces discrete mathematical terms and concepts, with specific areas of number theory also taught.

Course Outcomes

On successful completion, students will be able to

- understand basic terms of discrete mathematics as well as describe them and distinguish them from each other.
- understand concepts of number theory and their application in IT and technology and be able to solve tasks independently by applying these concepts.

Contents

1. Mathematical Basics
   - 1.1 Basic Concepts
   - 1.2 Proof Techniques
   - 1.3 Finite Sums
2. Sets
   - 2.1 Properties and Calculation Rules for Sets
   - 2.2 Equivalence Relations
3. Propositional Logic
   - 3.1 Statements and Logical Connections
   - 3.2 Truth Tables
   - 3.3 Computational Rules of Propositional Logic
   - 3.4 Simplification of Expressions in Propositional Logic

4. Number Systems
   - 4.1 Decimal System
   - 4.2 Binary System
   - 4.3 Hexadecimal System

5. Mappings
   - 5.1 Mappings and Graphs
   - 5.2 Special Properties of Mappings

6. Basic Algebraic Structures
   - 6.1 Groups
   - 6.2 Rings
   - 6.3 Residual Class Rings

7. Prime Numbers
   - 7.1 Definition and Properties of Prime Numbers
   - 7.2 Prime Number Test

8. Modular Arithmetic
   - 8.1 The Euclidean Algorithm
   - 8.2 Fundamental Theorem of Arithmetic

9. Applications in Cryptography
   - 9.1 The Shift Cryptosystem
   - 9.2 Symmetric vs Asymmetric Cryptosystems
   - 9.3 The RSA Cryptosystem

Literature

Compulsory Reading

Further Reading

- Rosenthal, D., Rosenthal, D., Rosenthal, P. (2018). A Readable Introduction to Real Mathematics (2nd ed.). Springer.
- Vaudenay, S. (2006). A Classical Introduction to Cryptography (1st ed.). Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☑ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☑ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ 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. Visieu Lac (Data Analytics and Big Data)

Contributing Courses to Module

- Data Analytics and Big Data (DLBINGDABD01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Written Assessment: Case Study Study Format: Distance Learning Written Assessment: Case Study	

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 fields

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
   - 1.5 Internet of Things as Driver for Big Data

2. Statistical Basics
   - 2.1 Descriptive Data Analysis
   - 2.2 Inferential Data Analysis
   - 2.3 Explorative Data Analysis
   - 2.4 Multivariate Data Analysis

3. Data Mining
   - 3.1 Knowledge Discovery in Databases
   - 3.2 Association Analysis
   - 3.3 Correlation Analysis
   - 3.4 Forecast
   - 3.5 Cluster Analysis
   - 3.6 Classification

4. Big Data Methods and Technologies
   - 4.1 Technology Building Blocks
   - 4.2 MapReduce
   - 4.3 Text- and Semantic Analysis
   - 4.4 Audio and Video Analysis
   - 4.5 BASE and NoSQL
   - 4.6 In-Memory Databases
   - 4.7 Big Data Success Factors

5. Legal Aspects of Data Analysis
   - 5.1 Data Protection Principles in Germany
   - 5.2 Anonymization and Pseudonymization
   - 5.3 International Data Analysis
   - 5.4 Performance and Integrity Protection

6. Solution Scenarios

7. Application of Big Data in the Industry
   - 7.1 Production and Logistics
   - 7.2 Increased Efficiency in the Supply Chain
   - 7.3 Key-Factor Data
   - 7.4 Examples and Conclusion

Literature

Compulsory Reading

Further Reading

- Akerkar, R., & Sajja, P., S. (2016). Intelligent Techniques for data science. Springer International.
- Jurafsky, D., & Martin, J., H. (2009). Speech and language processing – An introduction to natural language processing, computational linguistics, and speech recognition (2nd ed.). Prentice Hall,Pearson.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☐ Exam Template	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☐ Exam Template	☑ Slides	

DLBINGDABD01_E

Statistical Computing

Module Code: DLBDBSC_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. (Statistical Computing)

Contributing Courses to Module

- Statistical Computing (DLBDBSC01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Case Study	

Weight of Module

see curriculum

Module Contents

- Introduction to Statistical Computing
- Basics of programming with R
- Accessing data
- Descriptive statistics
- Inferential statistics
- Analysis of Variance
- Regression Analysis

Learning Outcomes

Statistical Computing

On successful completion, students will be able to

- classify and define the term statistical computing.
- create a PC working environment for the completion of tasks in the field of statistical computing.
- write simple programs with the R programming language.
- import and export data with R.
- apply different statistical methods with R, from descriptive statistics and inferential statistics to variance and regression analysis.

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	

Statistical Computing

Course Code: DLBDBSC01_E

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

Course Description

Statistical computing combines the concepts and methods of statistics with tools from computer science. The results include statistics programs and programming languages that offer many useful functions for the analysis of digitally available data sources. In this course, students are taught the programming language R in order to be able to apply statistical methods (e.g. regression analysis, analysis of variance). In the context of a case study, the acquired skills will be used to extract correlations from complex data sources and to display them graphically.

Course Outcomes

On successful completion, students will be able to

- classify and define the term statistical computing.
- create a PC working environment for the completion of tasks in the field of statistical computing.
- write simple programs with the R programming language.
- import and export data with R.
- apply different statistical methods with R, from descriptive statistics and inferential statistics to variance and regression analysis.

Contents

1. Introduction to Statistical Computing
   - 1.1 Definition and Delimitation
   - 1.2 Statistics Program vs. Statistics Programming Language
   - 1.3 Setting Up the Working Environment

2. Basics of Programming with R
   - 2.1 R as Pocket Calculator
   - 2.2 Assignments and Variables
   - 2.3 Vectors and Matrices
   - 2.4 Logic
   - 2.5 Functions
   - 2.6 Data Types and Data Structures

3. Accessing Data
   - 3.1 Enter Data
   - 3.2 Import and Export of External Files
   - 3.3 Data Management in R

4. Descriptive Statistics
   - 4.1 Univariate Descriptive Statistics
   - 4.2 Bivariate Descriptive Statistics

5. Inferential Statistics
   - 5.1 Distributions
   - 5.2 Samples
   - 5.3 t-Tests

6. Analysis of Variance
   - 6.1 Principles and Delimitation to the t-Test
   - 6.2 One-way Analysis of Variance
   - 6.3 Two-way Analysis of Variance

7. Regression Analysis
   - 7.1 Correlation
   - 7.2 Linear Regression
   - 7.3 Other Models and Procedures

Literature

Compulsory Reading

Further Reading

- Hui, E. (2018): Learn R for Applied Statistics: With Data Visualizations, Regressions, and Statistics. Apress, New York, New York, US.
- Toomey, D. (2017): Jupyter for Data Science. Exploratory analysis, statistical modeling, machine learning, and data visualization with Jupyter. Packt Publishing, Birmingham, UK.
- Wickham, H. and Grolemund, G. (2017): R for Data Science: Import, Tidy, Transform, Visualize, and Model Data. O'Reilly Media, Sebastopol, California, US.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☐ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☐ Exam Template	☑ Slides	

DLBDBSC01_E

Deep Learning

Module Code: DLBDBDL_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. (Deep Learning)

Contributing Courses to Module

- Deep Learning (DLBDBDL01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Introduction
- Introduction to Neural Networks
- Training Neural Networks
- Introduction to Deep Learning Frameworks
- Classification and Optimization
- Multilayer Neural Networks
- Convolutional Neural Networks

Learning Outcomes

Deep Learning

On successful completion, students will be able to

- place concepts of deep learning in the context of machine learning and artificial intelligence.
- define different types of regression and explain the implementation of logistic regression with perceptrons.
- explain the structure and function of simple neural networks.
- explain concepts and interrelationships in training of neural networks and to partially implement these concepts.
- differentiate between deep learning frameworks.
- implement, train and optimize neural networks with the help of a Deep Learning Framework
- understand the structure and functioning of Convolutional Neural Networks and train them using a Deep Learning Framework.

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

Deep Learning

Course Code: DLBDBDL01_E

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

Course Description

Owing to recent technological advances, some concepts and methods from artificial intelligence can now be applied in practice. A major concept affected by this progress are neural networks. Thanks to fast and inexpensive GPUs on the one hand and freely available and well-documented frameworks on the other hand, neural networks are used today to solve many different problems, from pattern recognition in text and images to the automated assessment of insurance claims. In this course, students are introduced to the basics of this technology and enabled to apply it using simple examples.

Course Outcomes

On successful completion, students will be able to

- place concepts of deep learning in the context of machine learning and artificial intelligence.
- define different types of regression and explain the implementation of logistic regression with perceptrons.
- explain the structure and function of simple neural networks.
- explain concepts and interrelationships in training of neural networks and to partially implement these concepts.
- differentiate between deep learning frameworks.
- implement, train and optimize neural networks with the help of a Deep Learning Framework
- understand the structure and functioning of Convolutional Neural Networks and train them using a Deep Learning Framework.

Contents

1. Introduction
   - 1.1 AI
   - 1.2 Machine Learning
   - 1.3 Deep Learning
   - 1.4 Deep Learning Frameworks

2. Introduction to Neural Networks
   - 2.1 Linear Regression
   - 2.2 Logistic Regression
   - 2.3 Perceptrons
   - 2.4 Types of Perceptrons

3. Training Neural Networks
   - 3.1 Mean Square Deviation
   - 3.2 Gradient Method
   - 3.3 Multilayer Perceptron
   - 3.4 Backpropagation
   - 3.5 Implementing Backpropagation

4. Introduction to Deep Learning Frameworks
   - 4.1 Overview
   - 4.2 First Steps with Tensorflow
   - 4.3 Basic Concepts
   - 4.4 Mathematical Functions

5. Classification and Optimization
   - 5.1 Linear Classifier
   - 5.2 Cost Functions
   - 5.3 Parameter Configuration and Cross-Validation
   - 5.4 Stochastic Gradient Descent
   - 5.5 Mini-Batching
   - 5.6 Epochs

6. Multilayer Neural Networks
   - 6.1 Introduction and Motivation
   - 6.2 Structure and Mathematics
   - 6.3 Implementation with Tensorflow
   - 6.4 Adaptation of Existing Models
   - 6.5 Over-Adaptation and Possible Solutions

7. Convolutional Neural Networks
   - 7.1 Motivation and Fields of Application
   - 7.2 Structure
   - 7.3 CNNs for Text Analysis
   - 7.4 CNNs for Image Analysis

Literature

Compulsory Reading

Further Reading

- Alpaydin, E. (2008): Maschinelles Lernen. Oldenbourg Wissenschaftsverlag, München.
- Géron, A. (2017): Praxiseinstieg Machine Learning mit Scikit-Learn und TensorFlow. Konzepte, Tools und Techniken für intelligente Systeme. O'Reilly.
- Rashid, T. (2017): Neuronale Netze selbst programmieren. Ein verständlicher Einstieg mit Python. O'Reilly.
- Russel, S. (2012): Künstliche Intelligenz – Ein moderner Ansatz. Pearson, Hallbergmoos.
- Zhang, Y./Wallace, B. (2016): A Sensitivity Analysis of (and Practitioners' Guide to) Convolutional Neural Networks for Sentence Classification. In: Proceedings of the Eighth International Joint Conference on Natural Language Processing, IJCNLP 2017. Asian Federation of Natural Language Processing Taipei, Taiwan.

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Business Intelligence

Module Code: DLBCSEBI1

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 Werning (Business Intelligence)

Contributing Courses to Module

- Business Intelligence (DLBCSEBI01)

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

- Motivation and Conceptualization
- Data Provision
- Data Warehouse
- Modeling of Multidimensional Data Spaces
- Analysis Systems
- Distribution and Access

Learning Outcomes

Business Intelligence

On successful completion, students will be able to

- explain the motivation, use cases, and basics of Business Intelligence.
- identify and explain techniques and methods for providing and modeling data, as well as types of data relevant to BI, differentiating between them.
- explain techniques and methods for the generation and storage of information and independently select suitable methods on the basis of concrete requirements.

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 Computer Science & Software Development	All Bachelor Programmes in the IT & Technology fields

Business Intelligence

Course Code: DLBCSEBI01

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

Course Description

Business Intelligence (BI) is used to obtain information from company data that is relevant for targeted corporate management and the optimization of business activities. This course introduces and discusses techniques, procedures, and models for data provision, information generation, and analysis, as well the distribution of the information obtained. You will then be able to explain the various subject areas of data warehousing and independently select methods and techniques to meet specific requirements.

Course Outcomes

On successful completion, students will be able to

- explain the motivation, use cases, and basics of Business Intelligence.
- identify and explain techniques and methods for providing and modeling data, as well as types of data relevant to BI, differentiating between them.
- explain techniques and methods for the generation and storage of information and independently select suitable methods on the basis of concrete requirements.

Contents

1. Motivation and Conceptualization
   - 1.1 Motivation and Historical Development
   - 1.2 BI as a Framework
2. Data Provision
   - 2.1 Operative and Dispositive Systems
   - 2.2 The Data Warehouse Concept
   - 2.3 Architectural Variations
3. Data Warehouse
   - 3.1 ETL Process
   - 3.2 DWH and Data Mart
   - 3.3 ODS and Metadata

4. Modelling of Multidimensional Data Spaces
   - 4.1 Data Modeling
   - 4.2 OLAP Cubes
   - 4.3 Physical Storage
   - 4.4 Star and Snowflake Scheme
   - 4.5 Historicization
5. Analysis Systems
   - 5.1 Free Data Research and OLAP
   - 5.2 Reporting Systems
   - 5.3 Model-Based Analysis Systems
   - 5.4 Concept-Oriented Systems
6. Distribution and Access
   - 6.1 Information Distribution
   - 6.2 Information Access

Literature

Compulsory Reading

Further Reading

- Grossmann, W., & Rinderle-Ma, S. (2015). Fundamentals of business intelligence. Springer.
- Kolb, J. (2013). Business intelligence in plain language: A practical guide to data mining and business analytics. Createspace.
- Sharda, R., Delen, D., & Turban, E. (2014). Business intelligence and analytics: Systems for decision support. Pearson.
- Sherman, R. (2014). Business intelligence guidebook: From data integration to analytics. Morgan Kaufmann.
- Vaisman, A., & Zimányi, E. (2016). Data warehouse systems: Design and implementation. Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☐ Guideline	
☑ Shortcast	☐ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Project: Business Intelligence

Module Code: DLBCSEBI2

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	BA	5	149 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 Werning (Project: Business Intelligence)

Contributing Courses to Module

- Project: Business Intelligence (DLBCSEBI02)

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

Possible topics for the BI project include “Management of BI projects”, “Design of multidimensional data models” and “Prototypical implementation of small BI applications”.

Learning Outcomes

Project: Business Intelligence

On successful completion, students will be able to

- independently design a solution to a practical problem in the field of Business Intelligence in order to then implement a prototype and document the results.
- identify and explain typical problems and challenges in the design and practical implementation of small BI 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 fields of Computer Science & Software Development	All Bachelor Programmes in the IT & Technology fields

Project: Business Intelligence

Course Code: DLBCSEBI02

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

Course Description

Using well-known methods and techniques from the field of Business Intelligence, students will work independently on a practical question in this course.At the end of the course you will be able to independently design and prototype Business Intelligence applications based on concrete requirements.

Course Outcomes

On successful completion, students will be able to

- independently design a solution to a practical problem in the field of Business Intelligence in order to then implement a prototype and document the results.
- identify and explain typical problems and challenges in the design and practical implementation of small BI solutions.

Contents

- Implementation and documentation of practical questions regarding the use of Business Intelligence applications. Typical scenarios are, for example, “Management of BI projects”, “Design of multidimensional data models” and “Prototypical implementation of small BI applications”.

Literature

Compulsory Reading

Further Reading

- Christoph Meinel, Hasso Plattner, Larry Leifer (2011): Design Thinking: Understand – Improve – Apply; Springer Berlin Heidelberg
- Jeanne Liedtka (2018): Why Design Thinking Works. In: Havard Business Review, Issue: 2018/09, pp.72–79
- Christoph Meinel, Larry J. Leifer (2021): Design Thinking Research: Interrogating the Doing; Springer International Publishing

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☐ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☐ Shortcast	☐ Live Tutorium/Course Feed	
☐ Audio	☐ Reader	
☐ Exam Template	☑ Slides	

5. Semester

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. Marian Benner-Wickner (Product Development in Industry 4.0)

Contributing Courses to Module

- Product Development in Industry 4.0 (DLBINGPE01_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

- 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. ▪ Kahn, K. B. (2004): The PDMA handbook of new product development. John Wiley & Sons, Inc, Hoboken, NJ. ▪ Levy, J. (2015): UX strategy: How to devise innovative digital products that people want. 1st edition, O'Reilly Media, Inc., Sebastopol, CA. ▪ Olsen, D. (2015): The Lean product playbook: How to innovate with minimum viable products and rapid customer feedback. Wiley, Hoboken, NJ. ▪ Reinertsen, D. G. (2009): The principles of product development flow: Second generation Lean product development. Celeritas, Redondo Beach, CA. ▪ Stark, J. (2011): Product lifecycle management: 21st century paradigm for product realisation. Springer, London. ▪ Ulrich, K. T./Eppinger, S. D. (2015): Product design and development. 6th edition, Mc-Graw Hill, New York, NY.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBINGPE01_E

Seminar in Current Topics in Digitalization

Module Code: DLBDBATD_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. Christian Rathmann (Seminar in Current Topics in Digitalization)

Contributing Courses to Module

- Seminar in Current Topics in Digitalization (DLBDBATD01_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

The seminar deals with current topics of digitalization and digital transformation. Students can discuss the effects on the economy and society, or gather information on current technological developments.

Learning Outcomes

Seminar in Current Topics in Digitalization

On successful completion, students will be able to

- independently familiarize themselves with a given topic from the field of digitalization or digital transformation.
- write down important characteristics, connections and findings in form of a paper.
- remember the basics of scientific work and to implement them in the seminar paper.

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(s) of Computer Science & Software Development.	All Bachelor Programs in the IT & Technology field(s).

Seminar in Current Topics in Digitalization

Course Code: DLBDBATD01_E

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

Course Description

In the seminar "Current Topics in Digitalization" students write a seminar paper on a specific topic and present their results. In this way, the students demonstrate that they are able to independently familiarize themselves with a topic and to document and present the knowledge gained in a structured manner.

Course Outcomes

On successful completion, students will be able to

- independently familiarize themselves with a given topic from the field of digitalization or digital transformation.
- write down important characteristics, connections and findings in form of a paper.
- remember the basics of scientific work and to implement them in the seminar paper.

Contents

- Digitalization is a wide-ranging subject area that can relate to very different aspects, depending on the specific terminology used. The seminar will meet this diversity by picking up current trends within the framework of formulated topic areas. Each participant must prepare a seminar paper for this purpose. Possible topics include new technologies that drive digitalization (e.g. deep learning), effects on the working world (e.g. crowdsourcing or new qualification requirements in the field of data science) or new digital business models (e.g. Fintechs).

Literature
Compulsory Reading
Further Reading ▪ Pascual, D/ Daponte, P/ Kumar, U (2019): Handbook of Industry 4.0 and SMART Systems. CRC Press. Boca Raton. ▪ Porter, M. E.; Heppelmann, J. E. (2014): How Smart, Connected Products Are Transforming Competition. In: Harvard Business Review 92 (11), S. 64-88. ▪ Anand, B. (2016): The Content Trap: A Strategist's Guide to Digital Change. Random House. New York. ▪ Ross, PK/ Ressia, S/ Sander, JS (2017): Work in the 21st Century: How Do I Log On?. Emerald Publishing. Bingley. ▪ Osterwalder, A/Pigneur, Y. (2010): Business Model Generation: A Handbook for Visionaries, Game Changers, John Wiley & Sons Inc. New Jersey. ▪ Dark Horse Innovation (Hrsg.) (2017): Digital Innovation Playbook. The essential exercise book for founders, doers and managers. Murmann. Hamburg.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format myStudies

Study Format	Course Type
myStudies	Seminar

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☐ Reader
☐ Exam Template	☑ Slides

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)

Contributing Courses to Module

- Corporate Finance and Investment (DLBCFIE01)

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

- 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

1. Introduction to Corporate Finance
   - 1.1 The Targets and Scope of Corporate Finance
   - 1.2 The Role of a Financial Manager
   - 1.3 The Financial Market Environment

2. Ownership and Corporate Governance
   - 2.1 Legal Types of Firms
   - 2.2 Agency Relations and Agency Problems in Corporations
   - 2.3 Institutional Investors, Incentives, and Market Control Mechanisms

3. Understanding Financial Statements and Key Performance Indicators
   - 3.1 Balance Sheets
   - 3.2 Income Statements
   - 3.3 Cash Flow Statements
   - 3.4 Measuring Performance: Key Performance Indicators

4. Basic Concepts of Financial Theory
   - 4.1 Time Value of Money and Cash Flow Streams
   - 4.2 Interest Rates: Determinants and Quotes
   - 4.3 Estimating the Cost of Capital

5. Types of Capital and Financing
   - 5.1 Equity Capital
   - 5.2 Debt Financing
   - 5.3 Leasing
   - 5.4 Financial Leverage and Capital Structure

6. Short-Term Financing Decisions
   - 6.1 Cash Budgets and Short-Term Financial Plans
   - 6.2 Treasury and Cash Management
   - 6.3 Working Capital Management

7. Capital Budgeting and Decision-Making Methods in Investment
   - 7.1 Capital Budgeting and Investments
   - 7.2 Incorporating Risk in Capital Budgeting Decisions
   - 7.3 Investment Rules and Decision-Making Methods

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	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

DLBCFIE01

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)

Contributing Courses to Module

- Project: Design Thinking (DLBINGDT01_E)

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

- Basic principles of Design Thinking
- The Design Thinking microvprocess
- 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 fields

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. In: Harvard Business Review, June, p. 84–95. ▪ Brown, T./Kātz, B. (2019): Change by design: How design thinking transforms organizations and inspires innovation (Revised and updated edition). Harper Busienss, New York City, NY. ▪ IDEO (2015): The field guide to human-centered design: Design kit. 1st edition, IDEO, San Francisco, CL. ▪ Lewrick, M./Patrick, L./Leifer, L. (2018:. The design thinking playbook: Mindful digital transformation of teams, products, services, businesses and ecosystems. JOHN WILEY & Sons, Hoboken, NJ. ▪ Lewrick, M./Patrick, L./Leifer, L. (2020). Design Thinking Toolbook. JOHN WILEY & Sons, Hoboken, NJ.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

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

N.N. (Project: Smart Product Solutions)

Contributing Courses to Module

- Project: Smart Product Solutions (DLBIEPSPS01)

Module Exam Type

Module Exam	Split Exam
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 fields of Computer Science & Software Development	All Bachelor Programs in the IT & Technology fields

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

- Avlonitis, V. (2013): PSS readiness manual. A workbook in the PROTEUS series: # 3. 1st edition, Kongens Lyngby: Technical University of Denmark.
- Bejbro Andersen, J. (2013): PSS business models. A workbook in the PROTEUS series: # 7. 1st edition, Kongens Lyngby: Technical University of Denmark.
- Meier, H./Boßlau, M. (2013): Design and Engineering of Dynamic Business Models for Industrial Product-Service Systems. In Y. Shimomura & K. Kimita (Eds.), Lecture Notes in Production Engineering. The Philosopher's Stone for Sustainability: Proceedings of the 4th CIRP International Conference on Industrial Product-Service Systems, Tokyo, Japan, November 8th - 9th, 2012 (pp. 179–184). Springer, Berlin, Heidelberg.
- Sakao, T./Lindahl, M. (2009): Introduction to Product/Service-System Design. Springer, London.
- 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 Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Change Management

Module Code: DLBDBCM_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. John Stanley (Change Management)

Contributing Courses to Module

- Change Management (DLBDBCM01_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

- Introduction to Change Management
- Understanding and shaping change
- Phase models of change management
- Phases of the change process
- Change communication
- Influencing factors and typical errors in change management
- Operational instruments in the context of change management

Learning Outcomes

Change Management

On successful completion, students will be able to

- explain the management of change in its broadest sense.
- identify the characteristics and procedures by which necessary changes in companies can beidentified and designed.
- grasp the basics of processes in change management and communicate them to otherparticipants.
- identify and analyze the need for change.
- outline typical tasks of managers in initiating and accompanying change processes.
- explain essential and effective techniques and tools of change processes and apply them.
- evaluate the success of change processes and measures.
- develop meaningful ways of dealing with resistance that arises in the change 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 fields of Business Administration & Management	All Bachelor Programs in the Business & Management fields

Change Management

Course Code: DLBDBCM01_E

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

Course Description

The pace of change in markets, technologies and customer behavior has increased significantly.These developments offer growth opportunities for companies - new business models, mergingmarkets, changed customer behavior. To utilize future potentials, companies need to implementchanges effectively and quickly. To do this, it is essential to know the meaning, structure, roles ofthe people involved, possible bottle neck situations and communication within the framework ofchange management. A great number of change programs regularly fail in the operationalimplementation. Therefore, knowledge of the systematic approach to the change process isnecessary to successfully manage change in and of the company. People and processes play acentral role in this procedure.

Course Outcomes

On successful completion, students will be able to

- explain the management of change in its broadest sense.
- identify the characteristics and procedures by which necessary changes in companies can beidentified and designed.
- grasp the basics of processes in change management and communicate them to otherparticipants.
- identify and analyze the need for change.
- outline typical tasks of managers in initiating and accompanying change processes.
- explain essential and effective techniques and tools of change processes and apply them.
- evaluate the success of change processes and measures.
- develop meaningful ways of dealing with resistance that arises in the change process.

Contents

1. Introduction to Change Management
   - 1.1 Terms and Definitions
   - 1.2 Limitations of Change Management
   - 1.3 Models of Change

2. Causes and Triggers of Change
   - 2.1 Change and Transformation
   - 2.2 External Triggers of Change
   - 2.3 Internal Triggers for Change

3. The company as an Obstacle to Change
   - 3.1 Obstacles at Organizational Level
   - 3.2 Collective Obstacles
   - 3.3 Economic Obstacles

4. Resistance at Individual Level
   - 4.1 Manifestations of Individual Resistance
   - 4.2 Causes and Triggers of Individual Resistance
   - 4.3 Actions towards Resistance

5. Change as a Management Task
   - 5.1 Success Factors of Change Management
   - 5.2 Management Tasks in Change
   - 5.3 Change Management Activity Plans

6. Leading Change
   - 6.1 Success Factor: Leadership and Manager
   - 6.2 Leadership Roles and Functions
   - 6.3 Change Communication

7. Management of Change Projects
   - 7.1 Change Management Models
   - 7.2 Organization of Change Management
   - 7.3 Controlling and Evaluation of Change Projects

Literature

Compulsory Reading

Further Reading

- Lauer, T. (2021). Change management: Fundamentals and success factors. Springer Verlag.
- Metcalfe, J. S., & Cantner, U. (Eds.). (2003). Change, transformation and development. Physica.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

6. Semester

Managing People and Fundamentals of Business Psychology

Module Code: DLBBAEMPFB_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. Michaela Moser (Introduction to New Work) / Prof. Dr. Julia Pitters (Business Psychology)

Contributing Courses to Module

- Introduction to New Work (DLBNWENW01_E)
- Business Psychology (DLBMPS01_E)

Module Exam Type

Module Exam	Split Exam
	Introduction to New Work • Study Format "Distance Learning": Exam (50) Business Psychology • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Introduction to New Work

- 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

Business Psychology

- General Theories of Business Psychology
- Psychology of Microeconomic Processes
- Psychology of Macroeconomic Processes
- Psychology of Change
- The Learning Organization

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.

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 Human Resources and Psychology	All Bachelor Programmes in the Human Resources and Social Sciences fields

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

1. What is New Work?
   - 1.1 The World of Work of the Future
   - 1.2 Concept Development
   - 1.3 New Work as an Interdisciplinary Approach

2. Megatrends
   - 2.1 Globalization
   - 2.2 Digitalization and Connectivity
   - 2.3 Individualization and Changing Values
   - 2.4 Demographic Change and Diversity

3. Organization of New Work
   - 3.1 Fixed Organization Forms
   - 3.2 Agile Organization Forms
   - 3.3 Effects of Agile Organization Forms

4. Leadership and Cooperation in New Work
   - 4.1 Empowerment
   - 4.2 Leadership
   - 4.3 New Forms of Agile Cooperation
   - 4.4 New Frameworks, Methods and Tools for Cooperation

5. Competence Development
   - 5.1 Competencies
   - 5.2 Settings and Mindset
   - 5.3 Continuous Learning

6. General Conditions and Criticism
   - 6.1 General Conditions
   - 6.2 Critical Classification of New Work

Literature

Compulsory Reading

Further Reading

- Bernstein, E. et al. (2016): Beyond the Holacracy Hype. Harvard Business Review, Harvard.
- Bergmann, F. (2019): New Work, New Culture: Work We Want and a Culture That Strengthens Us. Zero Books, Washington, S. 7–19.
- Carson, J. B./Tesluk, P. E./Marrone, J. A. (2007): Shared leadership in teams: An investigation of antecedent conditions and performance. In: Academy of management Journal, Journal 50 .„Magazine 5, p. 1217–1234.
- Felin, T./Powell, T. C. (2016): Designing organizations for dynamic capabilities. In: California Management Review, Journal 58, Magazine 4, p. 78–96.
- 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.
- Maitland, A./Thomson, P. (2011): Future work: How businesses can adapt and thrive in the new world of work. Springer, Berlin.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes
Type of Exam	Exam

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

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. Economic Psychology of People
   - 1.1 Economic Psychology
   - 1.2 Human Behavior in the Economy

2. Influencing Factors of Basic Economic Assumptions
   - 2.1 Decision-Making Theories and Decision Anomalies
   - 2.2 Perception and Processing of Information
   - 2.3 Feelings

3. Theories of Business Psychology
   - 3.1 Theories in the Field of Motivation
   - 3.2 Theories in the Field of Cognition
   - 3.3 Theories in the Field of Interaction

4. Psychology of Macroeconomic Processes
   - 4.1 Psychology of Economic Development
   - 4.2 Psychology of Developed Societies
   - 4.3 Psychology of Markets
   - 4.4 Psychology of Money

5. Psychology of Microeconomic Processes I
   - 5.1 Psychology of Work
   - 5.2 Psychology of the Work Force
   - 5.3 Psychology of Work Design
   - 5.4 Psychology of Job Satisfaction
   - 5.5 Psychology of Workload

6. Economic Psychology of Microeconomic Processes II
   - 6.1 Psychology of Organizations
   - 6.2 Organizational Groups
   - 6.3 Organizational Power
   - 6.4 Organizational Conflicts
   - 6.5 Organizational Leadership

7. Psychology of Change
   - 7.1 Areas of Organizational Change
   - 7.2 Phases of organizational Change
   - 7.3 Organizational Development

8. The Learning Organization
   - 8.1 Systemic Thinking
   - 8.2 Personal Mastery
   - 8.3 Mental Models
   - 8.4 Visions
   - 8.5 Team Learning

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	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBMPS01_E

Applied Sales

Module Code: DLBDSEAS

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

Tanja Moehler (Applied Sales I) / Tanja Moehler (Applied Sales II)

Contributing Courses to Module

- Applied Sales I (DLBDSEAS01)
- Applied Sales II (DLBDSEAS02)

Module Exam Type

Module Exam	Split Exam
	Applied Sales I • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Applied Sales II • Study Format "Distance Learning": Exam or Advanced Workbook (90) • Study Format "myStudies": Exam or Advanced Workbook, 90 Minutes

Weight of Module

see curriculum

Module Contents

Applied Sales I

- Fundamentals of Applied Sales
- The Distribution System
- Personal Sales
- Sales Plans
- New Customer Acquisition
- A Sales Visit
- Conversational Tactics
- Conducting Negotiations
- Other Sales Channels

Applied Sales II

- Marketing and Sales
- Customer Satisfaction as a Success Factor
- Personalities in Sales
- Customer-Oriented Communication
- Presentation and Rhetoric
- Customer Loyalty
- Networking
- Case Study

Learning Outcomes

Applied Sales I

On successful completion, students will be able to

- understand the fundamentals of applied sales and place them in the context of the company.
- understand the interaction of the individual facets of applied sales.
- differentiate between and evaluate individual sales systems.
- describe current sales types and sales characteristics.
- oversee and classify the entire sales process from customer acquisition to customer retention.
- understand the basics of sales and negotiation management and apply them.
- name the usual sales instruments, recognize their advantages and disadvantages, and reflect on essential fields of application and possibilities.

Applied Sales II

On successful completion, students will be able to

- understand the interaction and the respective areas of responsibility of marketing and sales.
- reflect on and classify the goals and measures within the framework of the applied sales system.
- assess the relevance of customer satisfaction and retention. In addition, the students will be familiar with the central design elements of CRM.
- reflect on and assess alternative approaches to customer loyalty and relationship management and apply them in business practice.
- understand the meaning of the terms customer life cycle and customer value, and develop approaches to manage them in the sense of the respective sales targets.
- use descriptive presentation techniques in order to convince customers and other sales partners.
- understand the relevance of networking and develop strategies to broaden the contact base.
- develop and evaluate their own market analyses and sales concepts on the basis of practical experience within the framework of the case study.

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

Applied Sales I

Course Code: DLBDSEAS01

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

Course Description

The demands on sales thinking are growing every day. Globalized demand combined with high competition is making it increasingly difficult for companies to compete for customers. At the same time, customers are becoming better informed, while traditional supply markets are saturated and at overcapacity. In order to be successful in such an environment, sales thinking and action are required along with a new type of salesperson. Within the course Applied Sales I (Introduction), the participants are familiarized with the basic concepts of applied sales. You will learn about sales organization, dealing with alternative sales channels, and get to know the dedicated sales planning process. The contents of the module are complemented by the successful acquisition of new customers, whereby particular attention is paid to the organization and implementation of customer visits and the conduct of discussions and negotiations.

Course Outcomes

On successful completion, students will be able to

- understand the fundamentals of applied sales and place them in the context of the company.
- understand the interaction of the individual facets of applied sales.
- differentiate between and evaluate individual sales systems.
- describe current sales types and sales characteristics.
- oversee and classify the entire sales process from customer acquisition to customer retention.
- understand the basics of sales and negotiation management and apply them.
- name the usual sales instruments, recognize their advantages and disadvantages, and reflect on essential fields of application and possibilities.

Contents

1. Fundamentals of Applied Sales and Distribution
   - 1.1 Tasks and Forms of Applied Distribution
   - 1.2 Marketing as the Basis of Sales
   - 1.3 Distribution, Sales, and Other Terms
   - 1.4 Sales in Different Economic Sectors

2. The Distribution System
   - 2.1 Forms of Sales
   - 2.2 Sales Organisation
   - 2.3 Key Account Management
   - 2.4 Multi-Channel Distribution

3. Personal Sales
   - 3.1 The "New Sellers"
   - 3.2 Requirements for Sales Personalities
   - 3.3 The Key Account Manager
   - 3.4 Task of Sales Managers

4. Sales Plan
   - 4.1 Tasks and Objectives of Sales Management
   - 4.2 Observation of Competition in the Context of Sales Management
   - 4.3 Potential Analyses and Sales Planning
   - 4.4 Sales Control and Visit Strategies

5. New Customer Acquisition
   - 5.1 Identification of New Customer Potential
   - 5.2 Customer Relationship Management and Customer Acquisition
   - 5.3 Trade Fairs and Events
   - 5.4 Networking

6. The Sales Visit
   - 6.1 Frequency and Preparation of Visits
   - 6.2 Conduct of a Visit
   - 6.3 Visit Reports and Follow-Up
   - 6.4 Aftercare and Follow-Up

7. Conversational Tactics
   - 7.1 Structured Conversation Preparation
   - 7.2 Goal-Oriented Conversation: The D.A.L.A.S Model
   - 7.3 Questioning Techniques

8. Conducting Negotiations
   - 8.1 Psychology of Negotiation
   - 8.2 Negotiation Structure
   - 8.3 Objection Handling
   - 8.4 Price Negotiations

9. Other Sales Channels
   - 9.1 Telemarketing
   - 9.2 Catalogue and Brochure Sales
   - 9.3 Internet and E-Commerce

Literature

Compulsory Reading

Further Reading

- Bloomfield, J. (2020). NeuroSelling: Mastering the customer conversation using the surprising science of decision making. Axon Publishing.
- Jobber, D., Lancaster, G., & Le Meunier-FitzHugh, K. (2019). Selling and sales management (10th ed.). Pearson.
- Peppers, D., & Rogers, M. (2016). Managing customer experience and relationships: A strategic framework (3rd ed.). Wiley.
- Pink, D. H. (2012). To sell is human: The surprising truth about moving others. Riverhead Books.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Applied Sales II

Course Code: DLBDSEAS02

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

Course Description

The course Applied Sales II builds on the basics taught in the course "Applied Sales I" and broadens and deepens them. First, the tension between marketing and sales is examined in more detail. Based on this, essential backgrounds and central target figures for successful sales management (e.g., customer satisfaction and loyalty as well as the customer life cycle) are derived and operationalized in order to create the basis for efficient and effective customer relationship management. As the process progresses, attention will also be paid to mental processes and consumer behavior in general. In addition, strategies and paths to successful negotiation are deepened and supplemented by convincing communication techniques. The course concludes with a case study in the course of which the students have the opportunity to apply what they have learned in a practice-oriented manner.

Course Outcomes

On successful completion, students will be able to

- understand the interaction and the respective areas of responsibility of marketing and sales.
- reflect on and classify the goals and measures within the framework of the applied sales system.
- assess the relevance of customer satisfaction and retention. In addition, the students will be familiar with the central design elements of CRM.
- reflect on and assess alternative approaches to customer loyalty and relationship management and apply them in business practice.
- understand the meaning of the terms customer life cycle and customer value, and develop approaches to manage them in the sense of the respective sales targets.
- use descriptive presentation techniques in order to convince customers and other sales partners.
- understand the relevance of networking and develop strategies to broaden the contact base.
- develop and evaluate their own market analyses and sales concepts on the basis of practical experience within the framework of the case study.

Contents

1. Marketing and Sales
   - 1.1 Marketing and Business Philosophy
   - 1.2 Sales Marketing in Different Economic Sectors
   - 1.3 Relationship Marketing
   - 1.4 (International) Marketing and Sales Integration

2. Customer Satisfaction as a Success Factor
   - 2.1 Customer Relationship Management (CRM)
   - 2.2 Customer Orientation Success Chain
   - 2.3 Customer Relationship Strategies

3. Customer Retention
   - 3.1 Customer Retention Management
   - 3.2 Customer Retention Tools
   - 3.3 Complaints Management

4. Customer-Oriented Communications
   - 4.1 Communication and Sales Promotion by Sales Staff
   - 4.2 Sales Promotion by Sales Team
   - 4.3 Sales Promotion by the Company

5. Personalities in Sales
   - 5.1 Sales Personalities
   - 5.2 Selling in Teams
   - 5.3 Negotiating with Committees

6. Presentation and Rhetoric
   - 6.1 Rhetoric in Sales
   - 6.2 Presentation Techniques
   - 6.3 Nonverbal Communication

7. Networking
   - 7.1 Organizational Networks and Networking
   - 7.2 Building and Shaping Relationships
   - 7.3 Networking via Social Media

8. Case Study—Multi-Vendor Customer Loyalty Programs
   - 8.1 German Consumer Goods Market & Drugstore Industry Situation
   - 8.2 PAYBACK—A German Synonym for Loyalty Cards

Literature

Compulsory Reading

Further Reading

- Homburg, C., Schäfer, H., & Schneider, J. (2012). Sales excellence: Systematic sales management.Springer Science & Business Media.
- Ingram, T. N., Schwepker, C. H., Williams, M. R., Avila, R. A., & LaForge, R. W. (2020). Salesmanagement: Analysis and decision making (10th ed.). Routledge, Taylor & Francis Group.
- Kotler, P., & Keller, K. L. (2021). Marketing management (16th, global ed.). Pearson Education

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes
Type of Exam	Exam or Advanced Workbook

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☑ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☑ Interactive Online Lecture
☐ Vodcast	☑ Guideline	
☑ Shortcast	☑ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

IT Service Management

Module Code: IWSM-01_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. André Köhler (IT Service Management) / Dr. Frank Müller (Project: IT Service Management)

Contributing Courses to Module

- IT Service Management (DLBCSITSM01-01)
- Project: IT Service Management (DLBCSPITSM01)

Module Exam Type

Module Exam	Split Exam
	IT Service Management • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes Project: IT Service Management • Study Format "Distance Learning": Written Assessment: Project Report • Study Format "myStudies": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

IT Service Management

- IT Service Management Basics and Terms
- ITIL 4 - Basics and Four Dimensions
- ITIL 4 - Service Value System
- ITIL 4 - Principles
- ITIL 4 - Practices
- Information Security Management with the IT Baseline Protection Framework of the BSI

Project: IT Service Management

Analysis, evaluation, and development of recommendations for taking action within the scope of concrete questions concerning aspects of IT Service Management. This is aided by the creation and planning of a project in the theoretical-theme context through all phases of project management. The quality assurance of the artefacts created is carried out both by the tutor and by students from the project groups.

Learning Outcomes

IT Service Management

On successful completion, students will be able to

- identify the fundamentals and challenges of IT service management.
- describe the motivation and structure of the IT Infrastructure Library (ITIL), distinguish four dimensions, apply the service value system and identify concrete practices.
- describe and apply fundamentals of IT security management.

Project: IT Service Management

On successful completion, students will be able to

- analyze typical problems and company situations from the area of IT service management in different project variations.
- develop, plan, and implement proposed solutions.
- convert theory into a pragmatic approach to a solution with the help of methodical tools from IT service management and project management.
- draw and apply the right conclusions in relation to their specific project environment.
- conceptually apply their theoretical knowledge to company-specific environmental factors.

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 Data Science & Artificial Intelligence	All Bachelor Programmes in the IT & Technology fields

IT Service Management

Course Code: DLBCSITSM01-01

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

Course Description

IT service management is an approach to align and understand a company's IT as a service provider and supporter of operational and business processes. This course uses the IT Infrastructure Library (ITIL) to teach concepts, procedures and best practices in the area of IT service management (IT operations). In other words, it looks at the management of activities that take place after an IT system has been developed: IT operations as a continuous run of the productive day-to-day business of a company's IT departments.

Course Outcomes

On successful completion, students will be able to

- identify the fundamentals and challenges of IT service management.
- describe the motivation and structure of the IT Infrastructure Library (ITIL), distinguish four dimensions, apply the service value system and identify concrete practices.
- describe and apply fundamentals of IT security management.

Contents

1. IT Service Management Basics and Terms
   - 1.1 IT Services
   - 1.2 IT Service Management
   - 1.3 ITSM Frameworks
2. ITIL 4 - Basics and Four Dimensions
   - 2.1 Stakeholders, Services and Service Management
   - 2.2 Value Contribution of IT
3. ITIL 4 - Service Value System
   - 3.1 Basics and Overview
   - 3.2 Inputs, Outcome and Governance
   - 3.3 The Service Value Chain
   - 3.4 Continual Improvement

4. ITIL 4 - Principles
   - 4.1 Overview
   - 4.2 Value Orientation
   - 4.3 Iterative Procedure and Feedback
   - 4.4 Establish Collaboration and Visibility
   - 4.5 Optimize and Automate

5. ITIL 4 - Practices
   - 5.1 Overview
   - 5.2 General Management Practices
   - 5.3 Service Management Practices
   - 5.4 Technical Practices

6. Information Security Management with the IT Basic Protection Framework of the BSI
   - 6.1 Structure and Elements of BSI Basic Protection Framework
   - 6.2 Information Security Process

Literature

Compulsory Reading

Further Reading

- Agutter, C. (2019). ITIL® foundation essentials ITIL 4 edition: The ultimate revision guide. ITGovernance Publishing.
- Axelos Limited. (2019). ITIL 4 foundation: ITIL 4 edition. The Stationery Office.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Project: IT Service Management

Course Code: DLBCSPITSM01

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

Course Description

Based on the contents of the course “IT Service Management”, selected aspects of the core processes of ITIL are deepened, discussed, selected, and applied within the framework of a project in a concept-related manner. All theoretical methods are considered and evaluated.

Course Outcomes

On successful completion, students will be able to

- analyze typical problems and company situations from the area of IT service management in different project variations.
- develop, plan, and implement proposed solutions.
- convert theory into a pragmatic approach to a solution with the help of methodical tools from IT service management and project management.
- draw and apply the right conclusions in relation to their specific project environment.
- conceptually apply their theoretical knowledge to company-specific environmental factors.

Contents

- Analysis, evaluation, and development of recommendations for taking action within the scope of concrete questions concerning aspects of IT Service Management. This is aided by the creation and planning of a project in the theoretical-theme context through all phases of project management.
- The quality assurance of the artefacts created is carried out both by the tutor and by students from the project groups.

Literature

Compulsory Reading

Further Reading

- Al-Ashmoery, Y., Haider, H., Haider, A., Nasser, N., & Al-Sarem, M. (2021). Impact of IT Service Management and ITIL Framework on the Businesses. 2021 International Conference of Modern Trends in Information and Communication Technology Industry (MTICTI), Modern Trends in Information and Communication Technology Industry (MTICTI), 2021 International Conference Of, 1–5.
- Limited, A. (2020). ITIL 4. Create, Deliver and Support. TSO.
- Limited, A. (2020). ITIL 4: Direct, Plan and Improve. TSO.
- Limited, A. (2019). ITIL foundation: ITIL (4th edition). The Stationery Office Ltd.
- Shastri, A., & Thampi, G. T. (2021). Automation of IT Service Management Processes. 2021 International Conference on Advances in Computing, Communication, and Control (ICAC3), Advances in Computing, Communication, and Control (ICAC3), 2021 International Conference On, 1–4.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Foundations of Programming with Python

Module Code: DLBBUEFPP

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

Dr. Cosmina Croitoru (Introduction to Programming with Python) / Prof. Dr. Max Pumperla (Object oriented and functional programming in Python)

Contributing Courses to Module

- Introduction to Programming with Python (DLBDSIPWP01)
- Object oriented and functional programming in Python (DLBDSOOFPP01)

Module Exam Type

Module Exam	Split Exam
	Introduction to Programming with Python • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes Object oriented and functional programming in Python • Study Format "Distance Learning": Portfolio • Study Format "myStudies": Portfolio

Weight of Module

see curriculum

Module Contents

Introduction to Programming with Python

- Introduction
- Variables and Data Types
- Statements
- Functions
- Errors and Exceptions
- Modules and Packages

Object oriented and functional programming in Python

This course introduces the students to the advanced programming concepts of object orientation and functional programming and how they are realized in the Python programming language.

Learning Outcomes

Introduction to Programming with Python

On successful completion, students will be able to

- use fundamental Python syntax.
- recollect common elementary data types.
- recognize foundational programming concepts and their realization in Python.
- understand error handling and logging.
- create working programs.
- list the most important libraries and packages for data science.

Object oriented and functional programming in Python

On successful completion, students will be able to

- explain basic notions in object-oriented programming such as functions and classes.
- understand object-oriented programming concepts and their relation to software design and engineering.
- describe advanced function concepts in Python.
- recognize important ideas from functional programming.
- recall important libraries for functional programming in Python.

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 Data Science & Artificial Intelligence	All Bachelor Programs in the IT & Technology fields

Introduction to Programming with Python

Course Code: DLBDSIPWP01

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

Course Description

This course provides students with a foundational understanding of the Python programming language. Following an introductory exposition to the importance of Python for data science-related programming tasks, students will be acquainted with fundamental programming concepts like variables, data types, and statements. Building on this basis, the important notion of a function is explained and errors, exception handling, and logging are explicated. The course concludes with an overview of the most widely-used library packages for data science.

Course Outcomes

On successful completion, students will be able to

- use fundamental Python syntax.
- recollect common elementary data types.
- recognize foundational programming concepts and their realization in Python.
- understand error handling and logging.
- create working programs.
- list the most important libraries and packages for data science.

Contents

1. Introduction
   - 1.1 Why Python?
   - 1.2 Obtaining and installing Python
   - 1.3 The Python interpreter , IPython, and Jupyter
2. Variables and Data Types
   - 2.1 Variables and value assignment
   - 2.2 Numbers
   - 2.3 Strings
   - 2.4 Collections
   - 2.5 Files

3. Statements
   - 3.1 Assignment, expressions, and print
   - 3.2 Conditional statements
   - 3.3 Loops
   - 3.4 Iterators and comprehensions

4. Functions
   - 4.1 Function declaration
   - 4.2 Scope
   - 4.3 Arguments

5. Errors and Exceptions
   - 5.1 Errors
   - 5.2 Exception handling
   - 5.3 Logs

6. Modules and Packages
   - 6.1 Usage
   - 6.2 Namespaces
   - 6.3 Documentation
   - 6.4 Popular data science packages

Literature

Compulsory Reading

Further Reading

- Barry, P. (2016). Head first Python: A brain-friendly guide. Sebastopol, CA: O'Reilly Media, Inc.
- Kapil, S. (2019). Clean Python: Elegant coding in Python. Berkeley, CA: Apress.
- Lubanovic, B. (2019). Introducing Python (2nd ed.). Sebastopol, CA: O'Reilly.
- Lutz, M. (2013). Learning Python (5th ed.). Sebastopol, CA: O'Reilly.
- Matthes, E. (2015). Python crash course: A hands-on, project-based introduction to programming. San Fransisco, CA: No Starch Press.
- Müller, A. C., & Guido, S. (2016). Introduction to machine learning with Python: A guide for data scientists. Sebastopol, CA: O'Reilly Media, Inc.
- Ramalho, L. (2015). Fluent Python: Clear, concise, and effective programming. Sebastopol, CA: O'Reilly.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Object oriented and functional programming in Python

Course Code: DLBDSOOFPP01

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

Course Description

This course builds upon basic knowledge of Python programming (Introduction to Programming with Python, DLBDSIPWP) and is concerned with the exposition of advanced Python programming concepts. To this end, important notions of object-oriented programming like classes and objects and pertaining design principles are outlined. Starting from an in-depth discussion of advanced features of Python functions, functional programming concepts and their implementation in Python are conveyed.

Course Outcomes

On successful completion, students will be able to

- explain basic notions in object-oriented programming such as functions and classes.
- understand object-oriented programming concepts and their relation to software design and engineering.
- describe advanced function concepts in Python.
- recognize important ideas from functional programming.
- recall important libraries for functional programming in Python.

Contents

- This course provides students with a thorough introduction to important notions and concepts from the domain of object-oriented programming such as classes, objects, abstraction, encapsulation, inheritance, polymorphism, composition, and delegation. Additionally, the functional programming paradigm and pertaining ideas like functions as first class objects, decorators, pure functions, immutability and higher order functions are conveyed. Pursuant to the portfolio course type, the aforementioned concepts and ideas are explored by hands-on programming projects.

Literature
Compulsory Reading
Further Reading ▪ Lott, S. F. (2018): Functional Python programming: Discover the power of functional programming, generator functions, lazy evaluation, the built-in itertools library, and monads. 2nd ed., Packt Publishing, Birmingham. ▪ Lutz, M. (2013): Learning Python. 5th ed., O'Reilly, Sebastopol, CA. ▪ Phillips, D. (2018): Python 3 object-oriented programming: Build robust and maintainable software with object-oriented design patterns in Python 3.8. 3rd ed., Packt Publishing, Birmingham. ▪ Ramalho, L. (2015): Fluent Python: Clear, concise, and effective programming. O'Reilly, Sebastopol, CA.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☑ Live Tutorium/Course Feed
☐ Audio	☐ Reader
☐ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☑ Live Tutorium/Course Feed
☐ Audio	☐ Reader
☐ Exam Template	☑ Slides

Computer Science and Cryptography

Module Code: DLBDBECSC

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. Carsten Skerra (Introduction to Computer Science) / Prof. Dr. Ralf Kneuper (Cryptography)

Contributing Courses to Module

- Introduction to Computer Science (DLBCSICS01)
- Cryptography (DLBCSCT01)

Module Exam Type

Module Exam	Split Exam
	Introduction to Computer Science • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes Cryptography • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Introduction to Computer Science

- Information representation
- Algorithms and Data Structures
- Propositional Logic / Boolean Algebra
- Hardware
- Networks and the Internet
- Software
- Computer Science as a Discipline

Cryptography

- Protection Targets, Vulnerabilities, and Threats
- Foundations of Cryptology and its Core Components
- Basic Cryptographic Applications
- Authentication
- Single Computer Security
- Security Communication Network
- Security E-Commerce
- Secure Software Development

Learning Outcomes

Introduction to Computer Science

On successful completion, students will be able to

- understand basic algorithms and data structures.
- apply basic constructs of propositional logic in programming.
- describe the structure of computer hardware systems.
- specify the structure and the main services of the internet.
- discuss professional conduct in computer science.

Cryptography

On successful completion, students will be able to

- give an overview of different classes of cryptographic systems.
- give a basic description of symmetric cryptographic methods, in particular One-Time Pad, DES, and AES, and describe their operating principles by means of simple, concrete examples.
- describe the basic hash functions.
- describe basic asymmetric cryptographic methods, especially RSA, and their operating principles by means of simple, concrete examples.
- describe the areas of application of cryptographic procedures and their application scenarios.

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 Computer Science

Course Code: DLBCSICS01

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

Course Description

The goal of this course is to provide an introduction to computer science and its main concepts. It covers basic topics such as information representation and an introduction to algorithms and data structures. Propositional logic and Boolean algebra are also introduced, both of which form an important basis in computer science, e.g., for expressing conditions in programming.Furthermore, the course introduces the three main components of computing infrastructures: hardware, networks, and software. Finally, the course covers the meta level by looking at the role of computer science as a discipline as well as ethics and professional conduct.

Course Outcomes

On successful completion, students will be able to

- understand basic algorithms and data structures.
- apply basic constructs of propositional logic in programming.
- describe the structure of computer hardware systems.
- specify the structure and the main services of the internet.
- discuss professional conduct in computer science.

Contents

1. Basic concepts of data processing
   - 1.1 Data, information and messages
   - 1.2 Software, firmware and hardware
   - 1.3 Languages, syntax and semantics
   - 1.4 Historical overview
2. Information representation
   - 2.1 Number representation formats
   - 2.2 Representation of non-numerical information
   - 2.3 Data types
   - 2.4 Redundancy and error tolerance

3. Algorithms and data structures
   - 3.1 Algorithms and flow diagrams
   - 3.2 Simple data structures
   - 3.3 Searching and sorting
   - 3.4 Quality of algorithms (correctness, termination, efficiency/complexity)

4. Propositional logic, Boolean algebra and circuit design
   - 4.1 Propositions and logical conclusions
   - 4.2 Conjunctive and disjunctive normal form
   - 4.3 Digital circuit design

5. Hardware and computer architectures
   - 5.1 Computer types and their architecture
   - 5.2 Processors and memory
   - 5.3 Input and output
   - 5.4 Interfaces and drivers
   - 5.5 High-performance computing

6. Networks and the internet
   - 6.1 Wired and wireless networks and their topologies
   - 6.2 The TCP/IP and the ISO/OSI model
   - 6.3 Internet structure and services
   - 6.4 The internet of things

7. Software
   - 7.1 BIOS and operating systems
   - 7.2 Application software and information systems
   - 7.3 Apps
   - 7.4 Embedded systems
   - 7.5 Software development

8. Computer Science as a discipline
   - 8.1 The role and sub-disciplines of computer science
   - 8.2 Artificial intelligence, data science and computer science
   - 8.3 Ethical aspects of computer science
   - 8.4 The ACM Code of Ethics and Professional Conduct

Literature
Compulsory Reading
Further Reading ▪ Dale, N., & Lewis, J. (2020). Computer science illuminated (7th ed.). Jones & Bartlett Learning. ▪ Downey, A. B., & Mayfield, C. (2020). Think Java: How to think like a computer scientist. O'Reilly. ▪ Filho, W. F. (2018). Computer science distilled: Learn the art of solving computational problems. Code Energy LLC. ▪ Petzold, C. (2000). Code: The hidden language of computer hardware and software. Microsoft Press. ▪ Whitington, J. (2016). A machine made this book: Ten sketches of computer science. Coherent Press.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Cryptography

Course Code: DLBCSCT01

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

Course Description

This course covers basic and targeted in-depth knowledge of cryptographic processes and the practical use of cryptographic systems. After an overview of cryptographic methods, hash functions, symmetric methods, and asymmetric methods are presented. The theoretical basics of selected procedures are taught and practically explained using simple examples. In addition, areas of application and application scenarios for cryptographic procedures are presented.

Course Outcomes

On successful completion, students will be able to

- give an overview of different classes of cryptographic systems.
- give a basic description of symmetric cryptographic methods, in particular One-Time Pad, DES, and AES, and describe their operating principles by means of simple, concrete examples.
- describe the basic hash functions.
- describe basic asymmetric cryptographic methods, especially RSA, and their operating principles by means of simple, concrete examples.
- describe the areas of application of cryptographic procedures and their application scenarios.

Contents

1. Protection Goals, Vulnerabilities, and Threats
   - 1.1 Protection Goals
   - 1.2 Vulnerabilities and Threats
2. Foundations of Cryptology and its Core Components
   - 2.1 Encoding
   - 2.2 Symmetrical Encryption
   - 2.3 Asymmetric Encryption
   - 2.4 One-way Functions and Cryptographic Hash Functions

3. Basic Cryptographic Applications
   - 3.1 Key exchange and Hybrid Processes
   - 3.2 Digital Signature
   - 3.3 Message Authentication Code
   - 3.4 Steganographic Methods

4. Authentication
   - 4.1 Passwords and Public-Key-Certificates
   - 4.2 Challenge-Response-Procedure and Zero-Knowledge-Procedure
   - 4.3 Biometric Methods
   - 4.4 Authentication in Distributed Systems
   - 4.5 Identities Through Smartcards

5. Security of Single Computers
   - 5.1 Malware and Cookies
   - 5.2 Some Special Features of Operating Systems
   - 5.3 Web Server Security

6. Security in Communication Networks
   - 6.1 Security Problems and Defense Concepts
   - 6.2 Internet Standards for Communication Security
   - 6.3 Identity and Anonymity
   - 6.4 Security in Mobile and Wireless Communications

7. Security in E-Commerce
   - 7.1 Email Security
   - 7.2 Online Banking and Online Payments
   - 7.3 Electronic Money

8. Secure Software Development
   - 8.1 Threat Modeling
   - 8.2 Secure Software Design
   - 8.3 Techniques for Safe Programming

Literature
Compulsory Reading
Further Reading ▪ Paar, C. & Pelzl, J. (2010). Understanding Cryptography. A Textbook for Students and Practitioners. Springer. ▪ Singh, S. (1999). The code book [electronic resource] : the science of secrecy from ancient Egypt to quantum cryptography (1. ed.). Anchor Books. ▪ Smart, N. P. (2016). Cryptography Made Simple. Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBCSCT01

Big Data and Cloud Technologies

Module Code: DLBCSEBDCT

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ none ▪ DLBCSDMDS01	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. Christian Müller-Kett (Big Data Technologies) / Prof. Dr. Christian Müller-Kett (Cloud Computing)

Contributing Courses to Module

- Big Data Technologies (DLBDSBDT01)
- Cloud Computing (DLBDSCC01)

Module Exam Type

Module Exam	Split Exam
	Big Data Technologies • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Cloud Computing • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Big Data Technologies

- Data types and data sources
- Text-based and binary data formats
- Distributed systems
- Streaming frameworks
- NoSQL approach to data storage

Cloud Computing

- Cloud computing fundamentals
- Relevant enabling technologies for cloud computing
- Introduction to serverless computing
- Established cloud platforms
- Cloud offerings for data science and analytics

Learning Outcomes

Big Data Technologies

On successful completion, students will be able to

- name types and sources of data.
- understand text-based and binary data formats.
- analyze the requirements and constraints of distributed analysis systems.
- evaluate the applications of streaming frameworks.
- describe the motivation for NoSQL data stores and categorize pertaining established concepts.

Cloud Computing

On successful completion, students will be able to

- understand the fundamentals of cloud computing and cloud service models.
- recognize enabling technologies that underlie current cloud offerings.
- cite the principles of serverless computing.
- analyze characteristics of established cloud offerings.
- describe cloud options for data science and machine learning

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(s) of Computer Science & Software Developement.	All Bachelor Programmes in the IT & Technology field(s).

Big Data Technologies

Course Code: DLBDSBDT01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
BA	English		5	DLBCSDMDS01

Course Description

Data are often considered the “new oil”, the raw material from which value is created. To harness the power of data, the data need to be stored and processed on a technical level. This course introduces the four “Vs” of data, as well as typical data sources and types. The course discusses the most common data storage formats encountered in modern systems, focusing both on text-based as well as binary data formats.Handling large amounts of data poses significant challenges for the underlying infrastructure. The course discusses the most important distributed and streaming data handling frameworks which are used in leading edge applications.

Course Outcomes

On successful completion, students will be able to

- name types and sources of data.
- understand text-based and binary data formats.
- analyze the requirements and constraints of distributed analysis systems.
- evaluate the applications of streaming frameworks.
- describe the motivation for NoSQL data stores and categorize pertaining established concepts.

Contents

1. Data Types and Data Sources
   - 1.1 The 4Vs of data: volume, velocity, variety, veracity
   - 1.2 Data sources
   - 1.3 Data types
2. Text-Based and Binary Data Formats
   - 2.1 Simple formats: CSV, YAML
   - 2.2 XML
   - 2.3 JSON
   - 2.4 Hierarchical data format 5 (HDF 5)
   - 2.5 Apache Parquet
   - 2.6 Apache Arrow

3. NoSQL data stores
   - 3.1 Introduction and motivation
   - 3.2 Approaches and technical concepts

4. Distributed Systems
   - 4.1 Hadoop & MapReduce
   - 4.2 Hadoop file system (HDFS)
   - 4.3 Spark
   - 4.4 DASK

5. Streaming Frameworks
   - 5.1 Spark streaming
   - 5.2 Kafka

Literature
Compulsory Reading
Further Reading ▪ John, T. & Misra, P. (2017). Data Lake for Enterprises (1st ed.). Packt Publishing. ▪ Kleppmann, M. (2017). Designing data-intensive applications: the big ideas behind reliable, scalable, and maintainable systems. O'REILLY.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods		
☐ Learning Sprints®	☐ Review Book	☐ Sprint
☑ Course Book	☐ Creative Lab	☐ Interactive Online Lecture
☐ Vodcast	☐ Guideline	
☑ Shortcast	☐ Live Tutorium/Course Feed	
☑ Audio	☐ Reader	
☑ Exam Template	☑ Slides	

Cloud Computing

Course Code: DLBDSCC01

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

Course Description

Many of the recent advances in data science, particularly machine learning and artificial intelligence, rely on comprehensive data storage and computing power. Cloud computing is one way of providing that power in a scalable way, without considerable upfront investment in hardware and software resources. This course introduces the area of cloud computing together with its enabling technologies. Moreover, the most cutting-edge advances like serverless computing and storage are illustrated. Finally, a thorough overview on popular cloud offerings, especially in regard to analytics capabilities, is given.

Course Outcomes

On successful completion, students will be able to

- understand the fundamentals of cloud computing and cloud service models.
- recognize enabling technologies that underlie current cloud offerings.
- cite the principles of serverless computing.
- analyze characteristics of established cloud offerings.
- describe cloud options for data science and machine learning

Contents

1. Introduction to Cloud Computing
   - 1.1 Fundamentals of Cloud computing
   - 1.2 Cloud Service Models
   - 1.3 Benefits and Risks
2. Enabling Technology
   - 2.1 Virtualization and Containerization
   - 2.2 Storage Technology
   - 2.3 Networks and RESTful Services
3. Serverless Computing
   - 3.1 Introduction to Serverless Computing
   - 3.2 Benefits
   - 3.3 Limitations

4. Established Cloud Platforms
   - 4.1 General Overview
   - 4.2 Google Cloud Platform
   - 4.3 Amazon Web Services
   - 4.4 Microsoft Azure
   - 4.5 Platform Comparison

5. Data Science in the Cloud
   - 5.1 Provider-independent services and tools
   - 5.2 Google Data Science and Machine Learning Services
   - 5.3 Amazon Web Services Data Science and Machine Learning Services
   - 5.4 Microsoft Azure Data Science and Machine Learning Services

Literature

Compulsory Reading

Further Reading

- Chapin, J., & Roberts, M. (2017). What is serverless? Sebastopol, CA: O'Reilly Media.
- Goessling, S., & Jackson, K. L. (2018). Architecting cloud computing solutions. Birmingham: Packt Publishing.
- Kavis, M. J. (2014). Architecting the cloud: Design decisions for cloud computing service models (SaaS, PaaS, and IaaS). Hoboken, NJ: Wiley.
- Mahmood, Z., Puttini, R., & Erl, T. (2013). Cloud computing: Concepts, technology & architecture. Boston, MA: Prentice Hall.
- Rafaels, R. (2018). Cloud computing (2nd ed.). Scotts Valley, CA: CreateSpace Independent Publishing Platform.
- Sehgal, N. K., & Bhatt, P. C. P. (2018). Cloud computing: Concepts and practices. Cham: Springer.
- Zonooz, P. Farr, E., Arora, K., & Laszewski, T. (2018). Cloud native architectures. Birmingham: Packt Publishing.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

IT project and architecture management

Module Code: DLBCSEITPAM

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

Johannes Kent Walter (IT Project Management) / Prof. Dr. Sebastian Lempert (IT Architecture Management)

Contributing Courses to Module

- IT Project Management (DLBCSEITPAM01)
- IT Architecture Management (DLBCSEITPAM02)

Module Exam Type

Module Exam	Split Exam
	IT Project Management • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes IT Architecture Management • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

IT Project Management

- Basic terms and foundations of IT project management
- Large and small planning techniques
- Techniques for prioritization, cost-estimation, and project controlling
- Techniques for stakeholder, communication, and risk management
- Organization and structure in IT project management
- Schools of thought in IT project management

IT Architecture Management

- Basic terms and foundations of IT enterprise architectures management
- IT application portfolio management
- Architecture governance
- Modeling of IT enterprise architectures
- Frameworks using TOGAF as an example
- Reference models and sample catalogues

Learning Outcomes

IT Project Management

On successful completion, students will be able to

- explain and differentiate between the basic principles and tasks of IT project management.
- explain the important practical techniques and methods necessary for the implementation of IT project management.
- describe the basic procedural models and explain their advantages and disadvantages as well as their possible applications.
- identify possible project risks on the basis of given practical scenarios and select suitable measures from IT project management in order to minimize them in a targeted manner.

IT Architecture Management

On successful completion, students will be able to

- describe and explain the basic principles of IT strategy, governance, and architecture management, differentiating between them.
- explain and differentiate the typical activities of IT architecture management, their interrelationships, and their dependencies.
- explain suitable models of IT architecture management, distinguish between them, and explain their intended purpose.
- explain and describe selected IT architectural frameworks as well as reference models and sample catalogues.

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 Developement.	All Bachelor Programmes in the IT & Technology field.

IT Project Management

Course Code: DLBCSEITPAM01

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

Course Description

In this course, typical problems in the management of Software projects are discussed and the methods and techniques used to address challenges conveyed.In addition, standard procedural models for IT project management are explained and their strengths and weaknesses specifically identified.

Course Outcomes

On successful completion, students will be able to

- explain and differentiate between the basic principles and tasks of IT project management.
- explain the important practical techniques and methods necessary for the implementation of IT project management.
- describe the basic procedural models and explain their advantages and disadvantages as well as their possible applications.
- identify possible project risks on the basis of given practical scenarios and select suitable measures from IT project management in order to minimize them in a targeted manner.

Contents

1. Basics Terms and Foundations of IT Project Management
   - 1.1 Definition of a Project and Types of IT Projects
   - 1.2 IT Project Lifecycle
   - 1.3 Multi-Project Management – The Project in the Context of the Organization
2. Planning Techniques
   - 2.1 Large-Scale Planning: Milestones, Sub-tasks, and Work Packages
   - 2.2 Large-Scale Planning: Gantt Charts
   - 2.3 Planning and Organization of Work Packages: Kanban Board
3. Prioritization, Estimation of Costs, Project Controlling
   - 3.1 Prioritization
   - 3.2 Estimation of Costs
   - 3.3 Project Controlling

4. Stakeholder, Communication and Risk Management
   - 4.1 Stakeholder Management
   - 4.2 Communication Management
   - 4.3 Risk Management

5. Organization and Structure in IT Project Management
   - 5.1 Overview and Levels of Management from PRINCE2
   - 5.2 Management Processes in PRINCE2
   - 5.3 Pragmatic IT Project Management (PITPM)
   - 5.4 Configuration of an IT Project in PITPM
   - 5.5 Management of a project in PITPM

6. Schools of Thought in IT Project Management
   - 6.1 Agile Software Development
   - 6.2 Value-Based Software Engineering

Literature

Compulsory Reading

Further Reading

- Project Management Institute. (2021). A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition and The Standard for Project Management (ENGLISH): Vol. Seventh edition. Project Management Institute.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

IT Architecture Management

Course Code: DLBCSEITPAM02

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

Course Description

In addition to concrete IT projects, such as the development of a new IT system or the introduction of standard software, a strategic management system for organizational-wide IT infrastructure – that is, for all IT hardware and software systems – must be used.Strategic management is the responsibility of the IT enterprise architect, who operates IT architecture management. Their task is to strategically align IT infrastructure with an organization's business and IT strategy.This course covers the typical concepts, methods, procedures, and IT models of architecture management.

Course Outcomes

On successful completion, students will be able to

- describe and explain the basic principles of IT strategy, governance, and architecture management, differentiating between them.
- explain and differentiate the typical activities of IT architecture management, their interrelationships, and their dependencies.
- explain suitable models of IT architecture management, distinguish between them, and explain their intended purpose.
- explain and describe selected IT architectural frameworks as well as reference models and sample catalogues.

Contents

1. Basic Terms and Foundation for the Management of IT Enterprise Architectures
   - 1.1 IT Enterprise Architecture
   - 1.2 Goals of Enterprise Architecture Management
   - 1.3 Processes in the Management of IT Enterprise Architectures
2. IT Application Portfolio Management
   - 2.1 IT Application Portfolio Management Overview
   - 2.2 Application Manual
   - 2.3 Portfolio Analysis
   - 2.4 Development Planning

3. Architecture Governance
   - 3.1 Organizational Structure
   - 3.2 Policy Development and Enforcement
   - 3.3 Project Support

4. Modeling of IT Enterprise Architectures
   - 4.1 Models in the Context of IT Architecture Management
   - 4.2 Forms of Documentation for Processes and Applications
   - 4.3 Forms of Documentation for Systems and Technologies

5. Frameworks Using the Example of TOGAF
   - 5.1 Fundamentals and Use of IT Architecture Frameworks
   - 5.2 Overview and Categories of EAM Frameworks
   - 5.3 The Open Group Architecture Framework (TOGAF)

6. Reference Models and Sample Catalogues
   - 6.1 Architecture Reference Models
   - 6.2 EAM Design Sample Catalogue

Literature

Compulsory Reading

Further Reading

- Ahlemann, F., Messerschmidt, M., Stettiner, E., & Legner, C. (2012). Strategic enterprise architecture management. Challenges, best practices, and future developments. Springer-Verlag.
- Perroud, T., & Inversini, R. (2013). Enterprise architecture patterns: Practical solutions for recurring IT-architecture problems. Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Supply Chain Management

Module Code: DLBDSESCM

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. Alex Leberling (Supply Chain Management I) / Sebastian Stütz (Supply Chain Management II)

Contributing Courses to Module

- Supply Chain Management I (DLBDSESCM01)
- Supply Chain Management II (DLBDSESCM02)

Module Exam Type

Module Exam	Split Exam
	Supply Chain Management I • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes Supply Chain Management II • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Supply Chain Management I

- 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

Supply Chain Management II

- 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 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.

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 fields of Logistics & Transportation	All Bachelor Programmes in the Transport & Logistics fields

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

- Bolstorff, P., & Rosenbaum, R. (2011). Supply chain excellence: A handbook for dramatic improvement using the SCOR model. AMACOM.
- 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.
- Kurbel, K. E. (2013). Enterprise resource planning and supply chain management: Functions, business processes and software for manufacturing companies. Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

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., 7thed.). 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	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBDSESCM02

Sustainable Entrepreneurship

Module Code: DLBEPWSEP_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. Karsten Hurrelmann (Sustainability) / Prof. Dr. Mirko Bendig (Project: Sustainable Entrepreneurship)

Contributing Courses to Module

- Sustainability (DLBBAS01_E)
- Project: Sustainable Entrepreneurship (DLBEPWSEP01_E)

Module Exam Type

Module Exam	Split Exam
	Sustainability • Study Format "myStudies": Exam or Written Assessment: Case Study, 90 Minutes • Study Format "Distance Learning": Exam or Written Assessment: Case Study, 90 Minutes Project: Sustainable Entrepreneurship • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Sustainability

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

Project: Sustainable Entrepreneurship

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

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.

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 Business & Management field

Sustainability

Course Code: DLBBAS01_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 Introduction 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 System Service Design

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

6. Examples of Corporate Sustainability Management Programs
   - 6.1 Case 1
   - 6.2 Case 2
   - 6.3 Case 3

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 myStudies

Study Format	Course Type
myStudies	Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes
Type of Exam	Exam or Written Assessment: Case Study, 90 Minutes

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes
Type of Exam	Exam or Written Assessment: Case Study, 90 Minutes

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

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	**BOLK:** no
Type of Exam	Written Assessment: Project Report

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Innovative Technologies and Sustainability

Module Code: DLBEPWITN_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. Mirko Bendig (Circular Economy) / Prof. Dr. Lars Meinecke (Sustainable Technologies)

Contributing Courses to Module

- Circular Economy (DLBEPWITN01_E)
- Sustainable Technologies (DLBEPWITN02_E)

Module Exam Type

Module Exam	Split Exam
	Circular Economy • Study Format "Distance Learning": Exam, 90 Minutes Sustainable Technologies • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Circular Economy

- 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

Sustainable Technologies

- Energy technologies
- Water technologies
- Raw material and material technologies
- Urban technologies
- Transport technologies
- Evaluation of sustainable technologies

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.

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 fields of Qualityand Sustainability Management and Natural Sciences	All Bachelor Programs in the Transport & Logistics and IT & Technology fields

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 Climate Crisis
   - 1.3 Waste of resources
   - 1.4 Negative externalities

2. Drivers of the Circular Economy
   - 2.1 Legal framework in Germany
   - 2.2 International framework conditions - Paris Climate Treaty, UN Sustainable Development Goals
   - 2.3 Technological and economic drivers, such as Sharing Economy
   - 2.4 Social and political drivers, such as Zero Waste Vision, 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 Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

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 Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Business Ethics and Sustainability

Module Code: DLBEPWWEN_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ none ▪ keine	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

N.N. (Sustainability and Quality Management) / N.N. (Business Ethics)

Contributing Courses to Module

- Sustainability and Quality Management (DLBLONQM01_E)
- Business Ethics (BETH01_E)

Module Exam Type

Module Exam	Split Exam
	Sustainability and Quality Management • Study Format "Distance Learning": Exam, 90 Minutes Business Ethics • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Sustainability and Quality Management

- 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

Business Ethics

- Fundamentals of Business Ethics
- Ethics Theories at a glance
- Context of Business Ethics in the Western World
- Business Ethics Problems in Companies
- Business Ethics Concepts for Companies
- Practical Integration of Business Ethics in the Company

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.

Business Ethics

On successful completion, students will be able to

- identify conflicting interests between profit making and ethical behavior.
- name the different ethical problem situations in the daily business.
- understand business ethics theories and concepts.
- systematically integrate aspects of business ethics in daily business routine.
- use instruments of business ethics in order to sanction misconduct and to encourage ethicaldecision-making.

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 Quality & Sustainability Management and Economics.	All Bachelor Programs in the Transportation & Logistics and Business & Management field(s).

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	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Business Ethics

Course Code: BETH01_E

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

Course Description

Business Ethics deals with the application of ethical principles to business activities. The actions of individuals and companies are thus integrated into a context of social and ethical responsibility. Business Ethics derives its legitimacy from the effects that all economic activities have on other people, institutions and the environment. Social justice and sustainability are therefore among the most important norms of Business Ethics and are explained and described in the course. The aim of the course is providing general guidance on how to arrive at ethical decisions, rather than offering general solutions. In that sense, students are enabled to develop moral judgment in an informed manner and then make ethical decisions accordingly.

Course Outcomes

On successful completion, students will be able to

- identify conflicting interests between profit making and ethical behavior.
- name the different ethical problem situations in the daily business.
- understand business ethics theories and concepts.
- systematically integrate aspects of business ethics in daily business routine.
- use instruments of business ethics in order to sanction misconduct and to encourage ethicaldecision-making.

Contents

1. Fundamentals of Business Ethics
   - 1.1 Business and ethics - an overview
   - 1.2 Important terms and definitions
   - 1.3 Developments and perspectives in ethics
2. Ethics Theories at a glance
   - 2.1 The benefits of ethics theories
   - 2.2 Categorization of ethics theories
   - 2.3 Business Ethical Concepts

3. Context of Business Ethics in the Western World
   - 3.1 The importance of the context for business ethics
   - 3.2 Discussion of various contextual factors
   - 3.3 The relevance of company size on business ethics

4. Business Ethics Problems in Companies
   - 4.1 Categories of business ethicsl problems in companies
   - 4.2 Factors that make unethical behaviour more likely
   - 4.3 Case studies for ethics problems in companies

5. Business Ethics Concepts for Companies
   - 5.1 Corporate Social Responsibility
   - 5.2 Stakeholder Theory
   - 5.3 Business ethics in an international context

6. Practical Integration of Business Ethics in the Company
   - 6.1 Corporate Governance Codes
   - 6.2 Codes of Conduct/Codes of Ethics
   - 6.3 Whistleblowing
   - 6.4 Other instruments for implementing ethics in business practice

Literature

Compulsory Reading

Further Reading

- Boylan, M. (2014): Business Ethics: Vol. 2nd ed. Wiley-Blackwell.
- Crane, A., & Matten, D. (2016): Business Ethics: Managing Corporate Citizenship and Sustainability in the Age of Globalization. Oxford Oxford University Press .
- Ferrell, O. C./Ferrell, L., & Fraedrich, J. (2015): Business Ethics, 10th Ed. : Ethical Decision Making and Cases. Stamford [USA].
- Rossouw, D. & van Vuuren, L. (2017): Business Ethics 6e: Vol. 6th edition. Oxford University Press Southern Africa.
- Tricker, G., & Tricker, R. I. (2014): Business Ethics : a Stakeholder, Governance and Risk Approach. London Routledge.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Smart Services

Module Code: DLBINGSS_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

N.N. (Smart Services I) / N.N. (Smart Services II)

Contributing Courses to Module

- Smart Services I (DLBINGSS01_E)
- Smart Services II (DLBINGSS02_E)

Module Exam Type

Module Exam	Split Exam
	Smart Services I • Study Format "Distance Learning": Exam, 90 Minutes Smart Services II • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Smart Services I

- 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

Smart Services II

Analysis of a selected topic of Smart Services and design of a self-chosen assignment in a prototyping environment.

Learning Outcomes

Smart Services I

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.

Smart Services II

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 fields of Computer Science & Software Development	All Bachelor Programs in the IT & Technology fields

Smart Services I

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, Berlin.
- Evans, E. (2003): Domain-Driven Design. Tackling Complexity in the Heart of Software. Addison-Wesley, Upper Saddle River, NJ.
- Hohpe, G./Woolf, B./Brown, K. (2012): Enterprise Integration Patterns. Designing, Building, and Deploying Messaging Solutions. 16th edition, Addison-Wesley, Boston, MA.
- Nielsen, L. (2013): Personas – User Focused Design. Springer, London.
- Osterwalder, A/Pigneur, Y. (2010): Business Model Generation: A Handbook for Visionaries, Game Changers, John Wiley & Sons Inc., Hoboken, NJ.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Smart Services II

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

- Osterwalder, A., & Pigneur, Y. (2010). Business Model Generation [electronic resource] : a handbook for visionaries, game changers, and challengers. Wiley.
- Maria Maleshkova, Niklas Kühl, & Philipp Jussen. (2020). Smart Service Management : Design Guidelines and Best Practices. Springer.
- 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.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Smart Mobility

Module Code: DLBINGSM_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

N.N. (Smart Mobility I) / N.N. (Smart Mobility II)

Contributing Courses to Module

- Smart Mobility I (DLBINGSM01_E)
- Smart Mobility II (DLBINGSM02_E)

Module Exam Type

Module Exam	Split Exam
	Smart Mobility I • Study Format "Distance Learning": Exam, 90 Minutes Smart Mobility II • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Smart Mobility I

- 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

Smart Mobility II

In-depth analysis of a specific topic in the context of Smart Mobility in form of a prototype report.

Learning Outcomes

Smart Mobility I

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.

Smart Mobility II

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 fields of Computer Science & Software Development	All Bachelor Programs in the IT & Technology fields

Smart Mobility I

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	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☐ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Smart Mobility II

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	**BOLK:** no
Type of Exam	Written Assessment: Project Report

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Studium Generale

Module Code: DLBSG_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

N.N. (Studium Generale I) / N.N. (Studium Generale II)

Contributing Courses to Module

- Studium Generale I (DLBSG01_E)
- Studium Generale II (DLBSG02_E)

Module Exam Type

Module Exam	Split Exam
	Studium Generale I • Study Format "Distance Learning": See Selected Course Studium Generale II • Study Format "Distance Learning": See Selected Course

Weight of Module

see curriculum

Module Contents

Studium Generale I

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.

Studium Generale II

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.

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 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 Distance Learning

Study Format	Course Type
Distance Learning	See Selected Course

Information about the examination	
Examination Admission Requirements	**BOLK:** no
Type of Exam	See Selected Course

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

Instructional Methods
See Selected Course

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	**BOLK:** no
Type of Exam	See Selected Course

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

Instructional Methods
See Selected Course

Salesforce Platform Management

Module Code: DLSFPM

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. Thomas Bolz (Salesforce Fundamentals) / Prof. Dr. Thomas Bolz (CRM with Salesforce Service Cloud)

Contributing Courses to Module

- Salesforce Fundamentals (DLSFPM01)
- CRM with Salesforce Service Cloud (DLSFPM02)

Module Exam Type

Module Exam	Split Exam
	Salesforce Fundamentals • Study Format "Distance Learning": Written Assessment: Project Report CRM with Salesforce Service Cloud • Study Format "Distance Learning": Oral Project Report

Weight of Module

see curriculum

Module Contents

Salesforce Fundamentals

Using the learning platform trailhead students will learn the fundamentals of Salesforce. At the end of the course students will be able to administer the Salesforce platform. This module prepares them for the Salesforce administrator certification.

CRM with Salesforce Service Cloud

Using the learning platform trailhead students will learn how to manage customer relationships with Salesforce platform. At the end of the course they will be able to manage the Salesforce service cloud. This module prepares students for the Salesforce service cloud certification.

Learning Outcomes

Salesforce Fundamentals

On successful completion, students will be able to

- define what Salesforce and customer relationship management is.
- describe and compare the different options for importing and exporting data in Salesforce.
- create reports and visualize key business metrics in real-time in Salesforce.
- create a simple Salesforce app.
- control access to data using security tools in Salesforce.

CRM with Salesforce Service Cloud

On successful completion, students will be able to

- set up customer service with Salesforce service cloud.
- lead a customer service team in the digital era.
- create digital engagement on multiple channels.
- define service cloud goals and metrics.
- automate case management.
- improve customer service using artificial intelligence.

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 fields

Salesforce Fundamentals

Course Code: DLSFPM01

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

Course Description

Salesforce is the most used software solution for customer relationship management worldwide. Using the learning platform trailhead students will learn independently the fundamentals of Salesforce. The course introduces Salesforce and explains how to administrate it. Additionally, it presents essentials of the Salesforce platform.

Course Outcomes

On successful completion, students will be able to

- define what Salesforce and customer relationship management is.
- describe and compare the different options for importing and exporting data in Salesforce.
- create reports and visualize key business metrics in real-time in Salesforce.
- create a simple Salesforce app.
- control access to data using security tools in Salesforce.

Contents

- The content on the learning platform focuses on the features and the functionality used to maintain a Salesforce implementation. It provides general knowledge of the features available to end users and the configuration options available to a Salesforce administrator. Furthermore, the content enables to maintain a Salesforce organization, respond to common business requirements, and perform administrative functions using current Salesforce features.

Literature

Compulsory Reading

Further Reading

- Eason, J. (2014): Android Studio 1.0. (URL: http://android-developers.blogspot.de/2014/12/android-studio-10.html [accessed: 22.04.2016]).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods
Project Work

CRM with Salesforce Service Cloud

Course Code: DLSFPM02

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

Course Description

This course facilitates key aspects of setting up customer service with Salesforce service cloud on the learning platform trailhead. The course describes how to implement Salesforce service cloud and manage it. It enables to make better business decisions based on customer service data and to create a service metrics strategy. The course shows how to create processes to help support teams become more efficient and manage large data volumes within Salesforce and prepares students for the Salesforce service cloud certification.

Course Outcomes

On successful completion, students will be able to

- set up customer service with Salesforce service cloud.
- lead a customer service team in the digital era.
- create digital engagement on multiple channels.
- define service cloud goals and metrics.
- automate case management.
- improve customer service using artificial intelligence.

Contents

- The content on the learning platform focuses on designing and deploying solutions that support customer business processes and requirements using Salesforce applications. The content enables to design solutions using the Service Cloud functionality and to lead the implementation of these solutions within a customer organization.

Literature

Compulsory Reading

Further Reading

- Eason, J. (2014): Android Studio 1.0. (URL: http://android-developers.blogspot.de/2014/12/android-studio-10.html [accessed: 22.04.2016]).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods
Project Work

Salesforce Platform Development

Module Code: DLSFPD

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. Thomas Bolz (Salesforce Platform App Builder) / Prof. Dr. Thomas Bolz (Salesforce Platform Developer)

Contributing Courses to Module

- Salesforce Platform App Builder (DLSFPD01)
- Salesforce Platform Developer (DLSFPD02)

Module Exam Type

Module Exam	Split Exam
	Salesforce Platform App Builder • Study Format "Distance Learning": Written Assessment: Project Report Salesforce Platform Developer • Study Format "Distance Learning": Oral Project Report

Weight of Module

see curriculum

Module Contents

Salesforce Platform App Builder

Using the learning platform Trailhead students will learn the fundamentals of Salesforce. At the end of the course, the students will be able to design, build and deploy custom applications. This course prepares them for the Salesforce Platform App Builder Certification.

Salesforce Platform Developer

Using the learning platform Trailhead students will learn how to develop own applications, built from various parts of the Salesforce platform. At the end of the course they will be able to use Apex, Visualforce and basic Lightning components. This course prepares the students for the Salesforce Platform Developer I Certification.

Learning Outcomes

Salesforce Platform App Builder

On successful completion, students will be able to

- define what Salesforce and customer relationship management is,
- design the data model, user interface, and business logic for custom applications,
- customize applications for mobile use,
- design reports and dashboards,
- manage application security and deploy custom applications.

Salesforce Platform Developer

On successful completion, students will be able to

- develop own applications using Apex and basic Lightning components,
- write SOSL, SOQL and DML statements,
- use Visualforce to build custom user interfaces for mobile and web apps,
- build reusable, performant components that follow modern web standards,
- use the built-in testing framework to test Apex and Visualforce.

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

Salesforce Platform App Builder

Course Code: DLSFPD01

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

Course Description

Salesforce is the most used software solution for customer relationship management worldwide. This solution can be customized and personalized for the needs of customers, partners and employees. Using the learning platform Trailhead, students will learn independently the fundamentals of Salesforce and the development of customized application. This course prepares students for the Salesforce Platform App Builder Certification.

Course Outcomes

On successful completion, students will be able to

- define what Salesforce and customer relationship management is,
- design the data model, user interface, and business logic for custom applications,
- customize applications for mobile use,
- design reports and dashboards,
- manage application security and deploy custom applications.

Contents

- The content on the learning platform focuses on the features and functionality to design, build and deploy custom applications. The content also provides knowledge to define business logic and process automation declaratively. Furthermore, the design and management of the correct data models and the customization of applications for individual needs is included in this course. Thus, the content of this course enables to automate repetitive tasks and to optimize processes in customer organizations.

Literature
Compulsory Reading
Further Reading ▪ Gupta, R. (2019): Salesforce Platform App Builder Certification. A Practical Study Guide. 1st ed., Apress. ▪ Weinmeister, P. (2019): Practical Salesforce Development Without Code. Building Declarative Solutions on the Salesforce Platform. 2nd ed., Apress, Berkeley. ▪ Shaalan, S. (2020): Salesforce for Beginners. A step-by-step guide to creating, managing, and automating sales and marketing processes. Packt Publishing, Birmingham. ▪ Benioff, M./Langley, M. (2019): Trailblazer. The Power of Business as the Greatest Platform for Change. 1st ed.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Salesforce Platform Developer

Course Code: DLSFPD02

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

Course Description

The Salesforce platform not only forms the foundation of core Salesforce products like Sales Cloud and Service Cloud, but it is also possible to build own functionalities and own applications. Using the learning platform Trailhead, students will learn how to use the programmatic pillars of the Salesforce platform: Lightning components, Apex and Visualforce. This course prepares students for the Salesforce Platform Developer I Certification.

Course Outcomes

On successful completion, students will be able to

- develop own applications using Apex and basic Lightning components,
- write SOSL, SOQL and DML statements,
- use Visualforce to build custom user interfaces for mobile and web apps,
- build reusable, performant components that follow modern web standards,
- use the built-in testing framework to test Apex and Visualforce.

Contents

- The content on the learning platform focuses on the development of own functionality and own applications, built from various parts of the Salesforce platform. The content enables to use the programmatic elements Lightning components, Apex and Visualforce. Furthermore, knowledge is provided for data modeling, process automation, user interface design, testing and deployment. Thus, the content of this course enables to extend Salesforce by individual applications to cover the needs in customer organizations.

Literature

Compulsory Reading

Further Reading

- Salesforce (2020): Developer Documentation. (URL: https://developer.salesforce.com/docs/ [accessed: 12.12.2020])

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

DLSFPD02

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

Prof. Dr. Michaela Moser (Leadership 4.0)

Contributing Courses to Module

- Leadership 4.0 (DLBWPLS01_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

- 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 & Management fields

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 ▪ Au, C. v. (eds.) (2017): Characteristics and competencies of leaders. Mindfulness, self-reflection, soft skills and competence systems. Springer, Wiesbaden. ▪ Creusen, U./Eschemann, N. -R./Joahnn, T. (2010): Positive leadership. Psychology of successful leadership. Advanced strategies for the application of the grid model. Gabler, Wiesbaden. ▪ Furtner, M. R. (2017): Empowering Leadership. With self-responsible employees to innovation and top performance. Springer Gabler, Wiesbaden. ▪ Furtner, M. R./Baldegger, U. (2016): Self-Leadership and Leadership. Theories, models and practical implementation. Second edition, Springer Gabler, Wiesbaden. ▪ Manager Magazine Publishing Company (ed.) (2015): Harvard Business Manager Special: Leadership. How does leadership work in the age of digital transformation? A booklet about management in change. 37th year ▪ Hofer, S. (2016): More agile leadership. Simple measures for better teamwork, better performance and higher creativity. Springer Gabler, Wiesbaden. ▪ Kauffeld, S. (Hrsg.) (2014): Work, Organizational and Personnel Psychology for Bachelor. 2nd edition, Springer, Berlin. ▪ Maxwell, J. C. (2016): Leadership. The 21 most important management principles. 8th edition, fountain, pouring. ▪ Wilber, K. (2012): Integral Psychology. Mind, consciousness, psychology, therapy. Arbor, Freiburg.

Study Format myStudies

Study Format	Course Type
myStudies	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☑ Exam Template	☑ Slides

DLBWPLS01_E

Entrepreneurship and Innovation

Module Code: DLBBAEI_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. Mirko Bendig (Entrepreneurship and Innovation)

Contributing Courses to Module

- Entrepreneurship and Innovation (DLBBAEI01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: myStudies Written Assessment: Written Assignment Study Format: Distance Learning Written Assessment: Written Assignment	

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 and Management fields

Entrepreneurship and Innovation

Course Code: DLBBAEI01_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	Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

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

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

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☑ Course Book	☐ Creative Lab
☐ Vodcast	☑ Guideline
☑ Shortcast	☑ Live Tutorium/Course Feed
☑ Audio	☐ Reader
☐ Exam Template	☑ Slides

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)

Contributing Courses to Module

- Bachelor Thesis (DLBBT01)
- Colloquium (DLBBT02)

Module Exam Type

Module Exam	Split Exam
	Bachelor Thesis • Study Format "myStudies": Written Assessment: Bachelor Thesis • Study Format "Distance Learning": Written Assessment: Bachelor Thesis Colloquium • Study Format "myStudies": Presentation: Colloquium • Study Format "Distance Learning": Presentation: 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 ▪ Turabian, K. L. (2013). A Manual for Writers of Research Papers, theses, and dissertations (8th ed.). University of Chicago Press. ▪ 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. ▪ Selection of literature according to topic

Study Format myStudies

Study Format	Course Type
myStudies	Thesis

Information about the examination	
Examination Admission Requirements	**BOLK:** no
Type of Exam	Written Assessment: Bachelor Thesis

Student Workload					
Self Study	**Contact Hours**	**Tutorial**	**Self Test**	**Independent Study**	**Hours Total**
270 h	0 h	0 h	0 h	0 h	270 h

Instructional Methods	
☐ Learning Sprints®	☑ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Thesis

Information about the examination	
Examination Admission Requirements	**BOLK:** no
Type of Exam	Written Assessment: Bachelor Thesis

Student Workload					
Self Study	**Contact Hours**	**Tutorial**	**Self Test**	**Independent Study**	**Hours Total**
270 h	0 h	0 h	0 h	0 h	270 h

Instructional Methods	
☐ Learning Sprints®	☑ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

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 Defense

Information about the examination	
Examination Admission Requirements	**BOLK:** no
Type of Exam	Presentation: Colloquium

Student Workload					
Self Study	**Contact Hours**	**Tutorial**	**Self Test**	**Independent Study**	**Hours Total**
30 h	0 h	0 h	0 h	0 h	30 h

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Thesis Defense

Information about the examination	
Examination Admission Requirements	**BOLK:** no
Type of Exam	Presentation: Colloquium

Student Workload					
Self Study	**Contact Hours**	**Tutorial**	**Self Test**	**Independent Study**	**Hours Total**
30 h	0 h	0 h	0 h	0 h	30 h

Instructional Methods	
☐ Learning Sprints®	☐ Review Book
☐ Course Book	☐ Creative Lab
☐ Vodcast	☐ Guideline
☐ Shortcast	☐ Live Tutorium/Course Feed
☐ Audio	☑ Slides
☐ Exam Template	