MODULE HANDBOOK

Master of Science

Master Business and IT (FS-OI-EU-MBUIT-120)

120 CP

Distance Learning

INTERNATIONAL
UNIVERSITY OF
APPLIED SCIENCES

Classification: Consecutive

Contents

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3. Semester

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1. Semester

Global Supply Chain Management

Module Code: MWCH1_E

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

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

Module Coordinator

Prof. Dr. Sebastian Stütz (Global Supply Chain Management)

Contributing Courses to Module

- Global Supply Chain Management (MWCH01_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

- Value networks - motives, typologies, goals
- Directions of impact of SCM strategies

Learning Outcomes

Global Supply Chain Management

On successful completion, students will be able to

- specify the goals and tasks of supply chain management and how it differs from pure logistics management.
- specify the tools and instruments for designing SCM.
- list possible measures to avoid obstacles in the implementation and operation of supply chains.
- assess the potential impact of coordinating collaborations on supply chain management.
- name the basic supply, disposal and recycling strategies and indicate their contents.
- indicate the motives for quality management in SCM and the methods and instruments used.
- assess which business software can support and control the functions of the supply chain.

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

Global Supply Chain Management

Course Code: MWCH01_E

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

Course Description

A problem-centered understanding of global value networks requires knowledge of their motives and goals. Furthermore, in view of the apparent diversity, it seems particularly useful to systematize these networks in certain typologies. On the basis of such systematizations it is then possible to systematize the spectrum of strategically relevant questions and design options in the field of SCM in a differentiated form. In addition, this also makes it possible to present the instrumental categories of SCM that are particularly relevant in this context.

Course Outcomes

On successful completion, students will be able to

- specify the goals and tasks of supply chain management and how it differs from pure logistics management.
- specify the tools and instruments for designing SCM.
- list possible measures to avoid obstacles in the implementation and operation of supply chains.
- assess the potential impact of coordinating collaborations on supply chain management.
- name the basic supply, disposal and recycling strategies and indicate their contents.
- indicate the motives for quality management in SCM and the methods and instruments used.
- assess which business software can support and control the functions of the supply chain.

Contents

1. Motives and Effects of Logistics Value Networks
   - 1.1 What does Supply Chain Management mean?
   - 1.2 What is logistics management?
   - 1.3 Service providers in the supply chain
   - 1.4 Importance of Supply Chain Management
2. Typologies of SCM and design models
   - 2.1 Supply chain strategy
   - 2.2 Instruments for supply chain strategies
   - 2.3 Inventory Reduction in Warehouse Management
   - 2.4 Freight cost reduction within the framework of the transport cost policy

Literature

Compulsory Reading

Further Reading

- Arndt, H. (2010): Supply Chain Management. Optimization of logistic processes. 5th edition, Gabler, Wiesbaden.
- Chopra, S./Meindl, P. (2007): Supply Chain Management. Strategy, Planning and Operation. 3rd edition, Pearson, New Jersey.
- Cohen, S./Roussel, J. (2006): Strategic Supply Chain Management. Springer, Berlin/ Heidelberg.
- Corsten, H./Gössinger, R. (2008): Introduction to Supply Chain Management. 2nd edition, Oldenbourg, Munich.
- Handfield, R. B./Nichols, E. L. (2008): Introduction to Supply Chain Management. Prentice Hall, Upper Saddle River, NJ.
- Petry, T. (2006): Network strategy. Core of an integrated management of corporate networks. Gabler, Wiesbaden.
- Pfohl, H. C. (2009): Logistics systems. Fundamentals of Business Administration. 8th Edition, Springer, Berlin.
- Schulte, C. (2009): Logistics. Ways to optimize the supply chain. 5th edition, Vahlen, Munich.
- Simchi-Levi, D./Kaminsky, P./Simchi-Levi, E. (2008): Designing and Managing the Supply Chain. Concepts, Strategies and Case Studies. 3rd edition, McGraw-Hill, Boston.
- Werner, H. (2010): Supply Chain Management. Basics, strategies, instruments. Springer, Berlin.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Information and Knowledge Management

Module Code: DLMIMIUW_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Andrew Adjah Sai (Information and Knowledge Management)

Contributing Courses to Module

- Information and Knowledge Management (DLMIMIUW01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Introduction
- Strategic Information Management
- Information Management in the Workplace
- Data Management Scenarios
- Information Management Scenarios
- Knowledge-Based Systems
- Knowledge Management

Learning Outcomes

Information and Knowledge Management

On successful completion, students will be able to

- identify information flows in the company and derive recommendations for adequate infomation management systems.
- identify information management problems in the workplace and develop alternative approaches.
- distinguish between data and information management and name typical software on a case-by-case basis.
- explain the use and methods of knowledge-based systems and assess limitations of use.
- explain psychosocial conditions of knowledge distribution and to be able to derive recommendations from them.

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

Information and Knowledge Management

Course Code: DLMIMIUW01_E

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

Course Description

The use of digital information in companies is closely related to the knowledge of employees. This course provides students with the knowledge to localize information needs in the company, to identify transfer channels and to gain insights for the information technology to be used as well as for the preservation and application of knowledge in the company. Here, the connection between the strategic use of information technology and its effects on concrete workplace conditions is elaborated. After an overview of common methods of data management, case studies of information retrieval are explained, and suitable software solutions are considered. Based on this, systems and methods are presented that can be used to capture and store employee knowledge in order to serve as a basis for decision support. The necessary consideration of the psychosocial aspects of knowledge distribution form the conclusion of this course.

Course Outcomes

On successful completion, students will be able to

- identify information flows in the company and derive recommendations for adequate infomation management systems.
- identify information management problems in the workplace and develop alternative approaches.
- distinguish between data and information management and name typical software on a case-by-case basis.
- explain the use and methods of knowledge-based systems and assess limitations of use.
- explain psychosocial conditions of knowledge distribution and to be able to derive recommendations from them.

Contents

1. Introduction
   - 1.1 Defining the Subject Area
   - 1.2 Data, Metadata, Information, Knowledge
2. Strategic Information Management
   - 2.1 Identifying Information Flows
   - 2.2 Selection of Information Management Systems

Literature
Compulsory Reading
Further Reading ▪ Byström, K., Heinström, J. & Ruthven, I. (2019). Information at Work: Information Management in the Workplace. Facet Publishing. ▪ North, K., & Kumta, G. (2018). Knowledge management : Value creation through organizational learning (2nd edition). Springer. ▪ Usman, S. H., Zaveri, J., & Hamza, A. (2021). An Integrated View of Knowledge Management Enablers, Components, and Benefits: Comprehensive Literature Review. Journal of International Technology & Information Management, 30(4), 1–23.

Study Format Distance Learning

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

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

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

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

Requirements Management

Module Code: DLMPRERM

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

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

Module Coordinator

Michael Malik (Requirements Management)

Contributing Courses to Module

- Requirements Management (DLMPRERM01)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Exam or Oral Assignment, 90 Minutes	

Weight of Module

see curriculum

Module Contents

- Basics and Drivers of Requirements Management
- Classification and Terms of Requirements Management
- Tasks of Requirements Management
- Methods and Quality of Requirements Management
- Process and Industry-specific Needs of Requirements Management

Learning Outcomes

Requirements Management

On successful completion, students will be able to

- understand the drivers and the importance of requirements management.
- name the essential tasks and functions of requirements management as well as describe their meaning.
- explain the different methods of requirements management.
- define quality criteria for good requirements management and identify requirements smells.
- explain the process of requirements management and derive industry-specific needs.

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 Project Management	All Master Programs in the Business & Management field

Requirements Management

Course Code: DLMPRERM01

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

Course Description

Globalization and digitization are the mega-trends of our time. In addition to increasingly global networking, real-time communication and growing product complexity, customer requirements and needs are changing rapidly as well. The flexible, fast and target specific reaction, recording, controlling, monitoring and administration of these changing customer needs must be met by requirements management. This course will explain the internal and external drivers of requirements management as well as address the other mega-trends. The aim is to identify and understand the specific tasks, methods and quality criteria of requirements management. Furthermore, the need for industry-specific adaptation within the basic requirements management process flow is of major importance. Finally, this course will offer critical reflection, taking into consideration the limiting framework conditions when applying requirements management.

Course Outcomes

On successful completion, students will be able to

- understand the drivers and the importance of requirements management.
- name the essential tasks and functions of requirements management as well as describe their meaning.
- explain the different methods of requirements management.
- define quality criteria for good requirements management and identify requirements smells.
- explain the process of requirements management and derive industry-specific needs.

Contents

1. Basics and Drivers of Requirements Management
   - 1.1 Introduction
   - 1.2 Definition of Requirements and Management
   - 1.3 Requirements Management as an Answer to the VUCA World
   - 1.4 External and Internal Drivers for Requirements Management
   - 1.5 Project Management and Requirements Management
2. Classification and Terms of Requirements Management
   - 2.1 Requirements Management in Relation to Requirements Engineering
   - 2.2 Requirements Management in Relation to Business Analytics

Literature

Compulsory Reading

Further Reading

- Akbar, M. A. / Mahmood, S. / Alsanad, A. / Shafiq, M. / Gumaei, A. (2020): Organization Type and Size Based Identification of Requirements Change Management. Challenges in Global Software Development. IEEE Access, 8, p. 94089–94111.
- Ameri, F. / Stecke, K. E. / Cieminski, G. / Kiritsis, D. (2019): Advances in Production Management Systems. Production Management for the Factory of the Future. Bd. 566, Springer International Publishing.
- Papinniemi, J. / Hannola, L. / Maletz, M. (2014): Challenges in integrating requirements management with PLM. International Journal of Production Research, 52(15), p. 4412–4423.
- Wörösch, M. (2014): End-to-end requirements management for multi-projects in the construction industry. 1. Auflage., Report / DCAMM: No. S 162. DTU Mechanical Engineering, DCAMM.
- Zhang, J., Xue / D. & Gu, P. (2014): Robust adaptable design considering changes of requirements and parameters during product operation stage. The International Journal of Advanced Manufacturing Technology, 72(1-4), p. 387–401.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Advanced Research Methods

Module Code: DLMARM

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Tamara Wehrstein (Advanced Research Methods)

Contributing Courses to Module

- Advanced Research Methods (DLMARM01)

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

- Social Sience and Research Paradigms
- Case Study Research
- Specific Topics of Qualitative Research
- Advanced Issues of Qualitative Research Conceptualization and Data Analysis
- Underlying Assumptions of Quantitative Research: Concepts and Consequences
- Evaluation Research

Learning Outcomes

Advanced Research Methods

On successful completion, students will be able to

- understand and apply scientific methodologies in conducting empirical research.
- plan, design, and prepare research proposals.
- differentiate between different types of case studies, select and apply different data collection strategies.
- plan, conduct, and analyze case studies and surveys.
- scientifically analyze quantitative and qualitative data.
- conduct evaluation research to determine quality of research.

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

Advanced Research Methods

Course Code: DLMARM01

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

Course Description

Advanced research methods, specifically business research, is scientific inquiry that attempts to uncover new information which helps a business improve performance, maximizing shareholder value while adhering to ethical and moral compliance standards.Managers seeking to conduct empirical research must maintain validity, reliability, and trustworthiness when utilizing scientific methodologies in order to produce meaningful and actionable results. Research proposals are typically written prior to conducting research, which have a certain structure, enabling the researcher to properly plan, conduct, and analyze case studies and surveys. Different data collection strategies are used to collect both qualitative and quantitative data, depending on the research proposal goals. Managers utilize their understanding of research methodologies to accurately assess the quality of research.

Course Outcomes

On successful completion, students will be able to

- understand and apply scientific methodologies in conducting empirical research.
- plan, design, and prepare research proposals.
- differentiate between different types of case studies, select and apply different data collection strategies.
- plan, conduct, and analyze case studies and surveys.
- scientifically analyze quantitative and qualitative data.
- conduct evaluation research to determine quality of research.

Contents

1. Theoretical Background: Social Science and Research Paradigms
   - 1.1 What is a Paradigm?
   - 1.2 Empiricism
   - 1.3 Critical Rationalism
   - 1.4 Epistemological Anarchism
   - 1.5 Structural Functionalism
   - 1.6 Symbolic Interactionism
   - 1.7 Ethnomethodology
2. Case Study Research

Literature

Compulsory Reading

Further Reading

- Babbie, E. R. (2021). The practice of social research (15th ed.). Cengage Learning. - 14th ed. (2016)
- Crossman, A. (2019) How to conduct an index for research. (URL: https://www.thoughtco.com/index-for-research-3026543 [last accessed on 15.03.2023]).
- Eurostat (n.d.) Beginners: Statistical concept - Index and base year (URL: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Beginners:Statistical_concept_-_Index_and_base_year [last accessed on 15.03.2023]).
- Giles, D. (2004). Advanced research methods in psychology (Reprint). Psychology Press.
- Rea, L.M. & Parker, R.A. (2014). Designing and conducting survey research: A comprehensive guide, (4th ed). Jossey-Bass.
- Saunders, M., Thornhill, A., & Lewis, P. (2019). Research methods for business students (8th ed). Pearson
- Takahashi, A. R. W., & Araujo, L. (2019). Case study research: Opening up research opportunities. RAUSP Management Journal, 55(1), 100–111.
- Widner, J., Woolcock, M., & Ortega Nieto, D. (Eds.). (2022). The case for case studies: Methods and applications in international development (strategies for social inquiry). Cambridge University Press.

Study Format Distance Learning

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

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

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

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

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

Innovation and Entrepreneurship

Module Code: DLMBIE-01

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

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

Module Coordinator

Prof. Dr. Lena Bernhofer (Innovation and Entrepreneurship)

Contributing Courses to Module

- Innovation and Entrepreneurship (DLMBIE01-01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Innovation management and entrepreneurship in a globalized world
- Basics of entrepreneurship
- Business ideas and company foundations
- Financing sources and processes
- Internet, digital business, and artificial intelligence
- Strategic alliances
- Family-owned companies

Learning Outcomes

Innovation and Entrepreneurship

On successful completion, students will be able to

- understand the importance, fundamentals, and dimensions of entrepreneurship and its derivatives (intrapreneurship, corporate entrepreneurship, stakeholder relationships, and family businesses).
- analyze the opportunities and challenges associated with evaluating a business idea and setting up a business.
- distinguish between the different motivations behind entrepreneurial activity and develop specific objectives for new enterprises.
- develop a business model, including benchmarks for assessing desired sustainable growth.
- apply different legal forms to business start-ups and select the appropriate legal form for a specific business model.
- understand the different ways in which entrepreneurship and innovation can be financed and weigh them against each other in terms of medium- and long-term advantages and disadvantages.
- develop a rigorous business plan that can be used both as a planning and financing instrument.
- apply, in principle, an entrepreneurial mindset in a variety of different contexts of future professional development.

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

Innovation and Entrepreneurship

Course Code: DLMBIE01-01

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

Course Description

In today's globalized and digital world, entrepreneurs have more opportunities to develop and market products and services than ever before. However, entrepreneurship, whether in the form of entrepreneurship or intrapreneurship, presents special challenges. In order to avoid the typical pitfalls of starting and growing a business, a sound understanding of innovation management and building a business is essential. Particular attention must be paid to the financing of entrepreneurial activity, both from the perspective of the entrepreneur and the investor. Innovation and entrepreneurial activity are the basis and driving force of our economy. Even looking at other economies, it is obvious that innovation and entrepreneurship are crucial at every stage of economic development. Small enterprises in developing countries initiate the development of economic institutions and create supply, demand, and markets. These enterprises lay the foundation for economic development and growth. In developed economies, innovation and entrepreneurship are the driving forces behind competition and competitiveness in the global context. In all parts of the world, family businesses play the most important role. The rapid technological and social change present in our societies requires the innovative use of digital technologies (internet and artificial intelligence), as well as flexibility in handling new forms of organization (e.g., strategic alliances between companies). This course introduces students to the ideas behind, motives, and drivers of entrepreneurial activity and innovation and teaches them the practical aspects of the identification, analysis, and development of innovations and business ideas. The core competence of the entrepreneur—the ability to negotiate with investors and partners—is also addressed.

Course Outcomes

On successful completion, students will be able to

- understand the importance, fundamentals, and dimensions of entrepreneurship and its derivatives (intrapreneurship, corporate entrepreneurship, stakeholder relationships, and family businesses).
- analyze the opportunities and challenges associated with evaluating a business idea and setting up a business.
- distinguish between the different motivations behind entrepreneurial activity and develop specific objectives for new enterprises.
- develop a business model, including benchmarks for assessing desired sustainable growth.
- apply different legal forms to business start-ups and select the appropriate legal form for a specific business model.
- understand the different ways in which entrepreneurship and innovation can be financed and weigh them against each other in terms of medium- and long-term advantages and disadvantages.
- develop a rigorous business plan that can be used both as a planning and financing instrument.
- apply, in principle, an entrepreneurial mindset in a variety of different contexts of future professional development.

Contents

1. Entrepreneurship
   - 1.1 Entrepreneurship and entrepreneur
   - 1.2 Enterprise related theories of entrepreneurship
   - 1.3 The economic significance of entrepreneurship
2. Company formation strategy
   - 2.1 Different contexts in which companies are founded
   - 2.2 The Entrepreneur
   - 2.3 Business models and strategies
3. Innovation and innovation management
   - 3.1 Innovation
   - 3.2 Innovation management
   - 3.3 Protection of intellectual property
   - 3.4 Case study: BMW Empathic Design
4. Legal form in international comparison
   - 4.1 Germany
   - 4.2 International comparison: USA

Literature
Compulsory Reading
Further Reading ▪ Mariotti, S., & Glackin, C. (2016). Entrepreneurship: Starting & operating a small business (4th ed.). Pearson. ▪ Parker, S. C. (2009). The economics of entrepreneurship (pp. 1–28). Cambridge University Press. ▪ Scarborough, N. M., & Cornwall, J. R. (2019). Essentials of entrepreneurship and small business management (9th ed.). Pearson.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Study Format Distance Learning

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

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

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

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

Data Science

Module Code: DLMBDSA1

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

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

Module Coordinator

Prof. Dr. Ulrich Kerzel (Data Science)

Contributing Courses to Module

- Data Science (DLMBDSA01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Introduction to data science
- Use cases and performance evaluation
- Pre-processing of data
- Processing of data
- Selected mathematical techniques
- Selected artificial intelligence techniques

Learning Outcomes

Data Science

On successful completion, students will be able to

- identify use cases and evaluate the performance of data-driven approaches.
- understand how domain specific knowledge for a particular application context is required to identify objectives and value propositions for data science use cases.
- appreciate the role and necessity for business-centric model evaluation apposite to the respective area of application.
- comprehend how data are pre-processed in preparation for analysis.
- develop typologies for data and ontologies for knowledge representation.
- decide for appropriate mathematical algorithms to utilize data analysis for a given task.
- understand the value, applicability, and limitations of artificial intelligence for data 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 Data Science & Artificial Intelligence.	All Master Programmes in the IT & Technology field.

Data Science

Course Code: DLMBDSA01

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

Course Description

The course provides the framework to create value from data. After an introduction the course covers how to identify suitable use cases and evaluate the performance of data-driven methods. In an interdisciplinary approach, the requirements from a specific application domain need to be understood and transferred to the technological understanding to identify the objectives and value proposition of a Data Science project. The course covers techniques for the technical processing of data and then introduces advanced mathematical techniques and selected methods from artificial intelligence that are used to analyze data and make predictions.

Course Outcomes

On successful completion, students will be able to

- identify use cases and evaluate the performance of data-driven approaches.
- understand how domain specific knowledge for a particular application context is required to identify objectives and value propositions for data science use cases.
- appreciate the role and necessity for business-centric model evaluation apposite to the respective area of application.
- comprehend how data are pre-processed in preparation for analysis.
- develop typologies for data and ontologies for knowledge representation.
- decide for appropriate mathematical algorithms to utilize data analysis for a given task.
- understand the value, applicability, and limitations of artificial intelligence for data analysis.

Contents

1. Introduction to Data Science
   - 1.1 Overview of Data Science
   - 1.2 Terms and Definitions
   - 1.3 Applications & Notable Examples
   - 1.4 Sources of Data
   - 1.5 Structured, Unstructured, Streaming
   - 1.6 Typical Data Sources and their Data Type
   - 1.7 The 4 V's of Data: Volume, Variety, Velocity, Veracity
   - 1.8 Introduction to Probability Theory
   - 1.9 What Are Probabilities and Probability Distributions

- 1.10 Introduction to Bayesian Statistics
- 1.11 Relation to Data Science: Prediction as a Probability

2. Use Cases and Performance Evaluation
   - 2.1 Identification of Use Cases for Data Science
   - 2.2 Identifying Data Science Use Cases
   - 2.3 From Prediction to Decision: Generating Value from Data Science
   - 2.4 Evaluation of Predictions
   - 2.5 Overview of Relevant Metrics
   - 2.6 Business-centric Evaluation: the Role of KPIs
   - 2.7 Cognitive Biases and Decision-making Fallacies

3. Pre-Processing of Data
   - 3.1 Transmission of Data
   - 3.2 Data Quality and Cleansing of Data
   - 3.3 Transformation of Data (Normalization, Aggregation)
   - 3.4 Reduction of Data Dimensionality
   - 3.5 Data Visualisation

4. Processing of Data
   - 4.1 Stages of Data Processing
   - 4.2 Methods and Types of Data Processing
   - 4.3 Output Formats of Processed Data

5. Selected Mathematical Techniques
   - 5.1 Linear Regression
   - 5.2 Principal Component Analysis
   - 5.3 Clustering
   - 5.4 Time-series Forecasting
   - 5.5 Overview of Further Approaches

6. Selected Artificial Intelligence Techniques
   - 6.1 Support Vector Machines
   - 6.2 Neural Networks and Deep Learning
   - 6.3 Feed-forward Networks
   - 6.4 Recurrent Networks and Memory Cells
   - 6.5 Convolutional Networks
   - 6.6 Reinforcement Learning

6.7 Overview of Further Approaches

Literature

Compulsory Reading

Further Reading

- Akerar, R., & Sajja, P.S. (2016). Intelligent techniques for data science. Cham: Springer.
- Bruce, A., & Bruce, P. (2017). Practical statistics for data scientists: 50 essential concepts. Newton, MA: O'Reilly Publishers.
- Fawcett, T. & Provost, F. (2013). Data science for business: What you need to know about data mining and data-analytic thinking. Newton, MA: O'Reilly Media.
- Hodeghatta, U. R., & Nayak, U. (2017). Business analytics using R – A practical approach. Berkeley, CA: Apress Publishing. (Database: ProQuest).
- Liebowitz, J. (2014). Business analytics: An introduction. Boca Raton, FL: Auerbach Publications. (Available online).
- Runkler, T. A. (2012). Data analytics: Models and algorithms for intelligent data analysis. Wiesbaden: Springer Vieweg.
- Skiena, S. S. (2017). The data science design manual. Cham: Springer.

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

2. Semester

Customer Relationship Marketing

Module Code: MWMA2_E

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

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

Module Coordinator

Prof. Dr. Josephine Zhou-Brock (Customer Relationship Marketing)

Contributing Courses to Module

- Customer Relationship Marketing (MWMA02_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Concept and basics of Customer Relationship Marketing (CRM)
- Customer Relationship Strategies
- Customer acquisition, customer retention and customer recovery
- Electronic Customer Relationship Marketing (eCRM)
- Operational and analytical CRM processes

Learning Outcomes

Customer Relationship Marketing

On successful completion, students will be able to

- explain procedures for customer value-oriented analysis of strategic customer portfolios.
- understand the planning, implementation and control of value-oriented customer relationship strategies
- decide whether customer relationships should be systematically developed, deepened or actively terminated, taking into account the company, customer and competitive situation
- understand the high importance of the relational benefits, their brand- and personal determining factors as well as their value-enhancing character for the company.
- organize the structures and processes of relationship marketing with the help of modern business development in such a way that the contribution to value creation in the company is maximized.

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 Master Programs in the Online & Social Media Marketing field

Customer Relationship Marketing

Course Code: MWMA02_E

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

Course Description

The ability of a company to permanently bind customers to its products and/or services through systematic relationship marketing and to continuously increase customer lifetime value is one of the most value-adding activities in business practice. Customer relationship marketing comprises the development, intensification and securing of lasting and profitable customer relationships. With this understanding, the course provides basic orientation knowledge that is essential for understanding the complex CRM approach. In addition to a comprehensive explanation of the essential terms and interrelationships, management concepts are presented which can be used to design the individual phases of the customer relationship in a profitable and customer-oriented manner.

Course Outcomes

On successful completion, students will be able to

- explain procedures for customer value-oriented analysis of strategic customer portfolios.
- understand the planning, implementation and control of value-oriented customer relationship strategies
- decide whether customer relationships should be systematically developed, deepened or actively terminated, taking into account the company, customer and competitive situation
- understand the high importance of the relational benefits, their brand- and personal determining factors as well as their value-enhancing character for the company.
- organize the structures and processes of relationship marketing with the help of modern business development in such a way that the contribution to value creation in the company is maximized.

Contents

1. Begriff und Grundlagen des Customer-Relationship-Managements (CRM)
   - 1.1 Konzept und Begriff des CRMs
   - 1.2 Bedeutung des CRMs für das Unternehmen
   - 1.3 Kundenbeziehungszyklus und Erfolgskette der Kundenbindung
   - 1.4 Strukturen und Prozesse
2. Kundenbeziehungsstrategien
   - 2.1 Determinanten der Kundenbindung

Literature
Compulsory Reading
Further Reading ▪ Dowling, B. (2002): Customer Relationship Management: In B2C Markets, Often Less is More. In: California Management Review, 22. Jg., Heft 3, S. 113–125. ▪ Grönroos, C. (2001): Service Management and Marketing. A Customer Relationship Management Approach. 2. Auflage, Wiley, Hoboken (NJ). ▪ Gummesson, E. (2015): Total Relationship Marketing. Rethinking Marketing Management. 32. Auflage, Butterworth Heinemann, Oxford. ▪ Hennig-Thurau, T./Hansen, U. (Hrsg.) (2000): Relationship Marketing. Gaining Competitive Advantage Through Customer Satisfaction and Customer Retention. Springer, Berlin/Heidelberg. ▪ Kracklauer, A. H. (2005): Collaborative Customer Relationship Management. Taking CRM to the Next Level. Springer, Berlin/Heidelberg. ▪ Prahalad, C. K. et al. (2002): Harvard Business Review on Customer Relationship Management. Harvard Business School Publishing, Boston.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Artificial Intelligence

Module Code: DLMAIAI

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Claudia Heß (Artificial Intelligence)

Contributing Courses to Module

- Artificial Intelligence (DLMAIAI01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- History of AI
- AI application areas
- Expert systems
- Neuroscience
- Modern AI systems

Learning Outcomes

Artificial Intelligence

On successful completion, students will be able to

- remember the historical developments in the field of artificial intelligence.
- analyze the different application areas of artificial intelligence.
- comprehend expert systems.
- apply Prolog to simple expert systems.
- comprehend the brain and cognitive processes from a neuro-scientific point of view.
- understand modern developments in 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 field of Data Science & Artificial Intelligence.	All Bachelor Programmes in the IT & Technology field.

Artificial Intelligence

Course Code: DLMAIAI01

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

Course Description

The quest for artificial intelligence has captured humanity's interest for many decades and has been an active research area since the 1960s. This course will give a detailed overview of the historical developments, successes, and set-backs in AI, as well as the development and use of expert systems in early AI systems.In order to understand cognitive processes, the course will give a brief overview of the biological brain and (human) cognitive processes and then focus on the development of modern AI systems fueled by recent developments in hard- and software. Particular focus will be given to discussion of the development of "narrow AI" systems for specific use cases vs. the creation of general artificial intelligence.The course will give an overview of a wide range of potential application areas in artificial intelligence, including industry sectors such as autonomous driving and mobility, medicine, finance, retail, and manufacturing.

Course Outcomes

On successful completion, students will be able to

- remember the historical developments in the field of artificial intelligence.
- analyze the different application areas of artificial intelligence.
- comprehend expert systems.
- apply Prolog to simple expert systems.
- comprehend the brain and cognitive processes from a neuro-scientific point of view.
- understand modern developments in artificial intelligence.

Contents

1. History of AI
   - 1.1 Historical Developments
   - 1.2 AI Winter
   - 1.3 Notable Advances in AI
2. Expert Systems
   - 2.1 Overview Over Expert Systems
   - 2.2 Introduction to Prolog
3. Neuroscience
   - 3.1 The (Human) Brain

3.2 Cognitive Processes

4. Modern AI Systems
   - 4.1 Recent Developments in Hard- and Software
   - 4.2 Narrow vs General AI
   - 4.3 NLP and Computer Vision

5. AI Application Areas
   - 5.1 Autonomous Vehicles & Mobility
   - 5.2 Personalized Medicine
   - 5.3 FinTech
   - 5.4 Retail & Industry

Literature

Compulsory Reading

Further Reading

- Chowdhary, K. R. (2020). Fundamentals of Artificial Intelligence. Springer India.
- Russell, S. & Norvig, P. (2022). Artificial intelligence. A modern approach (4th ed.). Pearson Education.
- Ward, J. (2020). The student's guide to cognitive neuroscience. (4th ed.). Taylor & Francis Group.

Study Format Distance Learning

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

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Seminar: Societal Challenges in Digitalization

Module Code: DLMIHDG_E

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

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

Module Coordinator

Florian Allwein (Seminar: Societal Challenges in Digitalization)

Contributing Courses to Module

- Seminar: Societal Challenges in Digitalization (DLMIHDG01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Research Essay	

Weight of Module

see curriculum

Module Contents

The seminar deals with current topics around social challenges of digitalization. In particular, social aspects and challenges are addressed and digitalization's influence on changes in social processes and working environments is analyzed and reflected upon. Each participant has to write a scientific paper on an assigned topic, which can serve as preliminary work for the master's thesis.

Learning Outcomes

Seminar: Societal Challenges in Digitalization

On successful completion, students will be able to

- work independently on a given topic from the field of "Social Challenges of Digitalization", referring to academic literature.
- analyze important properties and relationships and present findings in a written scientific work.
- critically examine a given topic and identify potential problems or negative impacts so that decisions can be made based on this.

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 Master Programs in the IT & Technology fields

Seminar: Societal Challenges in Digitalization

Course Code: DLMIHDG01_E

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

Course Description

As part of the seminar "Social Challenges of Digitization", students prepare a scientific paper on a relevant topic. Students thus demonstrate that they are able to work independently on a current and socially relevant topic and to document the findings scientifically.

Course Outcomes

On successful completion, students will be able to

- work independently on a given topic from the field of "Social Challenges of Digitalization", referring to academic literature.
- analyze important properties and relationships and present findings in a written scientific work.
- critically examine a given topic and identify potential problems or negative impacts so that decisions can be made based on this.

Contents

- The seminar deals with current topics around social challenges of digitalization. In particular, social aspects and challenges are addressed and digitalization's influence on changes in social processes and working environments is analyzed and reflected upon. Each participant has to write a scientific paper on an assigned topic, which can serve as preliminary work for the master's thesis. The current catalog of topics is available on the learning platform and forms the content basis of the module. It can be supplemented or updated by the tutor.

Literature
Compulsory Reading
Further Reading ▪ Brynjolfsson, E., & McAfee, A. (2016). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Co. ▪ Diego Galar Pascual, Pasquale Daponte, & Uday Kumar. (2019). Handbook of Industry 4.0 and SMART Systems. CRC Press. ▪ Lathrop, D., & Ruma, L. (2010). Open Government: Collaboration, Transparency, and Participation in Practice (1st edition). O'Reilly Media. ▪ Nissenbaum, H. F. (2010). Privacy in context: Technology, policy, and the integrity of social life /. Stanford Law Books. ▪ O'Neil, C. (2017). Weapons of math destruction: How big data increases inequality and threatens democracy. Broadway Books. ▪ Rogers, D. L. (2016). The Digital Transformation Playbook: Rethink Your Business for the Digital Age. Columbia Business School Publishing. ▪ Shoshana Zuboff (2019, November 6). Surveillance Capitalism and Democracy. Making Sense of the Digital Society, Berlin. https://www.bpb.de/mediathek/300781/shoshana-zuboff-surveillance-capitalism-and-democracy ▪ Shoshana Zuboff (2019, November 6). Surveillance Capitalism and Democracy. Making Sense of the Digital Society, Berlin. https://www.bpb.de/mediathek/300781/shoshana-zuboff-surveillance-capitalism-and-democracy

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

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

Internet of Things

Module Code: DLMBMMIIT1

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

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

Module Coordinator

Rachel John Robinson (Internet of Things)

Contributing Courses to Module

- Internet of Things (DLMBMMIIT01)

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

- Consumer use cases and risks
- Business use cases and risks
- Social-economic issues
- Enabling technologies and networking fundamentals

Learning Outcomes

Internet of Things

On successful completion, students will be able to

- distinguish and discuss a broad range of use cases for the internet of things (IoT).
- understand and reflect upon the different perspectives on IoT.
- apply distinct techniques to engineer internet-of-things products.
- evaluate and identify appropriate IoT communication technology and standards according to given IoT product requirements.
- reflect on the respective theoretical foundation, evaluate different approaches, and apply appropriate approaches to practical questions and cases.

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

Internet of Things

Course Code: DLMBMMIIT01

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

Course Description

The Internet of Things (IoT), once a rough vision, has become reality today in a broad manner. There is a plethora of devices and services available to both consumers and businesses.
From smart homes to smart cities, from smart devices to smart factories – internet-of-things technologies impact on our lives and environments. This course follows a top-down approach, discussing a broad set of aspects connected with the internet of things. It starts with use cases and risks from the perspectives of customers and businesses and winds up with a technical foundation of the internet of things. To address the engineering perspective, a set of techniques is proposed.

Course Outcomes

On successful completion, students will be able to

- distinguish and discuss a broad range of use cases for the internet of things (IoT).
- understand and reflect upon the different perspectives on IoT.
- apply distinct techniques to engineer internet-of-things products.
- evaluate and identify appropriate IoT communication technology and standards according to given IoT product requirements.
- reflect on the respective theoretical foundation, evaluate different approaches, and apply appropriate approaches to practical questions and cases.

Contents

1. Introduction into the Internet of Things
   - 1.1 Foundations and Motivations
   - 1.2 Potential and Challenges
2. Social and Business Relevance
   - 2.1 Innovations for Consumers and Industry
   - 2.2 Impact on Human and Work Environment
   - 2.3 Privacy and Security
3. Architectures of Internet of Things and Industrial Internet of Things
   - 3.1 Elements of IoTs and IIoTs
   - 3.2 Sensors and Nodes

3.3 Power Systems
3.4 Fog Processors
3.5 Platforms

4. Communication Standards and Technologies
   4.1 Network Topologies
   4.2 Network Protocols
   4.3 Communication Technologies

5. Data Storage and Processing
   5.1 NoSQL and MapReduce
   5.2 Linked Data and RDF(S)
   5.3 Semantic Reasoning
   5.4 Complex Event Processing
   5.5 Machine Learning
   5.6 Overview of Existing Data Storage and Processing Platforms

6. Fields of Application
   6.1 Smart Home/Living
   6.2 Smart Buildings
   6.3 Ambient Assisted Living
   6.4 Smart Energy/Grid
   6.5 Smart Factory
   6.6 Smart Logistics
   6.7 Smart Healthcare
   6.8 Smart Agriculture

Literature

Compulsory Reading

Further Reading

- Lea, P. (2018). Internet of things for architects: Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security. Birmingham: Packt Publishing Ltd. (Database: Dawson).
- McEwen, A., & Cassimally, H. (2013). Designing the internet of things. Chichester: John Wiley & Sons. (Database: ProQuest).
- Raj, P., & Raman, A. C. (2017). The Internet of Things: Enabling technologies, platforms, and use cases. Boca Raton, FL: Auerbach Publications. (Database: ProQuest).
- Weber, R. H., & Weber, R. (2010). Internet of Things. Heidelberg: Springer. (Database: Dawson).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Management of IT Services and Architecture

Module Code: MWIT2-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Andrew Adjah Sai (Management of IT Services and Architecture)

Contributing Courses to Module

- Management of IT Services and Architecture (MWIT02-01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Basics of IT Service Management and Terminology
- IT Infrastructure Library (ITIL)
- IT Outsourcing
- IT Architecture Management
- IT Application Portfolio Management
- Structural Organization of IT and Architecture Governance

Learning Outcomes

Management of IT Services and Architecture

On successful completion, students will be able to

- name, explain and distinguish the basic principles of IT strategy, IT governance and IT architecture management.
- explain and differentiate between the typical activities of IT architecture management, their interrelationships and their dependencies.
- explain the fundamentals and challenges of IT service management.
- describe the motivation and structure of the IT Infrastructure Library (ITIL), explain the main elements and locate specific activities in the service lifecycle.

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 Master Programs in the IT & Technology field

Management of IT Services and Architecture

Course Code: MWIT02-01_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	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. Here, the focus is on quality management and handling of daily operations. In addition to specific IT projects, e.g., the development of an IT system or the introduction of standard software, strategic management must be used for the organization-wide IT infrastructure. The task of IT architecture management is the strategic alignment of the IT infrastructure with the organization's business and IT strategy. This course provides concepts, methods, procedures and models for the tasks within the scope of IT architecture management.

Course Outcomes

On successful completion, students will be able to

- name, explain and distinguish the basic principles of IT strategy, IT governance and IT architecture management.
- explain and differentiate between the typical activities of IT architecture management, their interrelationships and their dependencies.
- explain the fundamentals and challenges of IT service management.
- describe the motivation and structure of the IT Infrastructure Library (ITIL), explain the main elements and locate specific activities in the service lifecycle.

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
   - 2.3 Four Dimensions Model
3. ITIL 4 - Service Value System
   - 3.1 Basics and Overview

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 Distance Learning

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

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

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

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

Big Data Technologies

Module Code: DLMDSBDT

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

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

Module Coordinator

Prof. Dr. Christian Müller-Kett (Big Data Technologies)

Contributing Courses to Module

- Big Data Technologies (DLMDSBDT01)

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

- Data types and data sources
- Databases
- Modern storage frameworks
- Data formats
- Distributed computing

Learning Outcomes

Big Data Technologies

On successful completion, students will be able to

- identify different types and sources of data.
- understand different database concepts.
- learn to build new database structures.
- evaluate various data storage frameworks w.r.t. project requirements.
- analyze which data format to use for a given project.
- understand what roles you could take in such projects.
- create a distributed computing environment for a given project.
- understand the ethical impact of big data technology choices.

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 Master Programmes in the IT & Technology field.

Big Data Technologies

Course Code: DLMDSBDT01

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

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. This course then discusses how data are stored in databases. Particular focus is given to database structures and different types of databases, e.g., relational, noSQL, NewSQL, and time-series.Beyond classical and modern databases, this course covers a wide range of storage frameworks such as distributed filesystems, streaming, and query frameworks. This is complemented by a detailed discussion of data storage formats ranging from classical approaches such as CSV and HDF5 to more modern approaches like Apache Arrow and Parquet.Finally, this course gives an overview of distributed computing environments based on local clusters, cloud computing facilities, and container-based approaches.

Course Outcomes

On successful completion, students will be able to

- identify different types and sources of data.
- understand different database concepts.
- learn to build new database structures.
- evaluate various data storage frameworks w.r.t. project requirements.
- analyze which data format to use for a given project.
- understand what roles you could take in such projects.
- create a distributed computing environment for a given project.
- understand the ethical impact of big data technology choices.

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. Databases
   - 2.1 Database structures
   - 2.2 Introduction to SQL

2.3 Relational databases
2.4 nonSQL, NewSQL databases
2.5 Timeseries DB

3. Modern data storage frameworks
3.1 Distributed Filesystems
3.2 Streaming frameworks
3.3 Query frameworks

4. Data formats
4.1 Traditional data exchange formats
4.2 Apache Arrow
4.3 Apache Parquet

5. Distributed Computing
5.1 Cluster-based approaches
5.2 Containers
5.3 Cloud-based approaches

Literature

Compulsory Reading

Further Reading

- Date, C. J. (2003). An introduction to database systems. Pearson.
- Kleppmann, M. (2017). Designing data-intensive applications. O'Reilly.
- Wiese, L. (2015). Advanced data management. De Gruyter.

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

Instructional Methods

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

Learning Material
- ☑ Course Book
- ☑ Video

Exam Preparation
- ☑ Guideline

3. Semester

Project: Cloud Service Concept Study

Module Code: DLMWIPCSK_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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: Cloud Service Concept Study)

Contributing Courses to Module

- Project: Cloud Service Concept Study (DLMWIPCSK01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

As part of a concept study, publicly available cloud services are integrated in a way that they meet complex business requirements. The result achieved is then documented in a comprehensible manner.

Learning Outcomes

Project: Cloud Service Concept Study

On successful completion, students will be able to

- independently analyze business requirements and identify suitable cloud services.
- technically integrate existing cloud services in such a way that they can jointly meet the business requirements.
- document the solutions comprehensible from both the business and the technical perspective.
- evaluate and discuss the achieved result with regards to specific issues from the perspectives of software engineering, operations and management.

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

Project: Cloud Service Concept Study

Course Code: DLMWIPCSK01_E

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

Course Description

In the past, IT solutions were usually implemented specifically and then made available to business users via the company's own IT infrastructure. In the meantime, however, there is a very large range of specific IT functions that are offered as cloud services. On the one hand for the private sector, but also for the professional sector. Also, for companies it makes more and more sense to use cloud services instead of implementing IT solutions on their own. In this project, students will develop, and document IT solutions based on existing cloud services, which will be used to implement complex business requirements. The aim is to avoid implementing program code as far as possible. For this purpose, provided interfaces and integration platforms (e.g., Zapier, PowerAutomate, IFTTT) will be used. Subsequently, the achieved result is evaluated and discussed with regards to specific issues from the perspectives of software engineering, IT operations and management.

Course Outcomes

On successful completion, students will be able to

- independently analyze business requirements and identify suitable cloud services.
- technically integrate existing cloud services in such a way that they can jointly meet the business requirements.
- document the solutions comprehensible from both the business and the technical perspective.
- evaluate and discuss the achieved result with regards to specific issues from the perspectives of software engineering, operations and management.

Contents

- The aim of the course is to integrate publicly available cloud services by means of a concept study in a way that they fulfill complex business requirements. The result achieved is then documented in a comprehensible manner, evaluated from the perspectives of software engineering, operations, and management and in the form of a written project report.

Literature
Compulsory Reading
Further Reading ▪ Harinarayanan, V. P. (2021). Building the Modern Workplace with SharePoint Online : Solutions with SPFx, Power Automate, Power Apps, Teams, and PVA: 1st ed. Apress. ▪ Rahmati, A., Fernandes, E., Jung, J. & Prakash, A. (2017). IFTTT vs. Zapier: A Comparative Study of Trigger-Action Programming Frameworks. ▪ Ramalingam, V.A. (2018). Introducing Microsoft Flow: Automating Workflows Between Apps and Services. Apress, New York. ▪ Shamon, O. & Carlberg, L. (2020). iipax one as a Service in Cloud Integration Platforms: A Comparison of Zapier, IFTTT and Power Automate (Dissertation) [available on internet]. ▪ Zapier Inc: Getting started with Zapier [available on internet].

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Seminar Current Topics in IT-Management

Module Code: DLMISCT_E

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

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

Module Coordinator

N.N. (Seminar Current Topics in IT-Management)

Contributing Courses to Module

- Seminar Current Topics in IT-Management (DLMISCT01_E)

Module Exam Type

Module Exam	Split Exam
Study Format: Distance Learning Written Assessment: Research Essay	

Weight of Module

see curriculum

Module Contents

This seminar deals with current topics of IT-Management. The participants work independently on a self-chosen topic within a given range of IT Management-related fields and prepare it scientifically.

Learning Outcomes

Seminar Current Topics in IT-Management

On successful completion, students will be able to

- work independently on a given topic in the field of IT-Management with reference to English scientific literature.
- analyze important properties and interrelationships of a chosen subject and present findings in the form of a written scientific elaboration.
- autonomously acquire an in-depth understanding of a specific IT-Management topic.

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 Master Programs in the IT & Technology field

Seminar Current Topics in IT-Management

Course Code: DLMISCT01_E

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

Course Description

IT-Management is a central task of the practical implementation of business informatics, in which technical and organizational topics intertwine. Students acquire knowledge on a specialist topic from the area of "Current topics of IT-Management" autonomously and prepare it in the form of a scientific seminar paper. In this way, the students demonstrate that they are able to familiarize themselves with a topic in IT-Management on their own and to document the knowledge gained in a scientific way.

Course Outcomes

On successful completion, students will be able to

- work independently on a given topic in the field of IT-Management with reference to English scientific literature.
- analyze important properties and interrelationships of a chosen subject and present findings in the form of a written scientific elaboration.
- autonomously acquire an in-depth understanding of a specific IT-Management topic.

Contents

- This seminar deals with current approaches and challenges in the design and management of IT in companies, such as digitalization and the Internet of Things, cloud computing, IT offshoring and data protection. New technologies are constantly emerging that need to be evaluated and, if necessary, implemented and controlled in the company. Regardless of the specific issue, the central task always consists of the development, elaboration and discussion of the thematically relevant scientific theory and hints to practical relevance as well as the identification and evaluation of corresponding studies and findings. These are processed, interpreted, evaluated, and condensed into scientific statements by the students within the field of the underlying scientific question and prepared in the form of a written seminar paper. The module is based on the current catalog of topics available on the learning platform which can be augmented or updated.

Literature
Compulsory Reading
Further Reading ▪ Gayvoronskaya, T. & Meinel, C. (2021). Blockchain. Hype or Innovation. Springer. ▪ Lisdorf, A. (2021). Cloud Computing Basics: A Non-Technical Introduction. Apress. ▪ Meier, A. & Kaufmann, M. (2019). SQL & NoSQL Databases. Models, Languages, Consistency Options and Architectures for Big Data Management. Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

Agile Software Development Techniques and Methods

Module Code: DLMIWNF_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Damir Ismailovic (Agile Software Development Techniques and Methods) / Prof. Dr. Damir Ismailovic (Project: Agile Software Development Techniques and Methods)

Contributing Courses to Module

- Agile Software Development Techniques and Methods (DLMIWNF01_E)
- Project: Agile Software Development Techniques and Methods (DLMIWNF02_E)

Module Exam Type

Module Exam	Split Exam
	Agile Software Development Techniques and Methods • Study Format "Distance Learning": Written Assessment: Case Study Project: Agile Software Development Techniques and Methods • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Agile Software Development Techniques and Methods

- Features and Principles of Agility
- Agility in Small Teams with Scrum
- Agile Portfolio and Project Management
- Agile Requirements and IT Architecture Management
- Agile Testing
- Agile Delivery and Deployment

Project: Agile Software Development Techniques and Methods

The goal of the project is the execution of an agile project based on agile methods such as Scrum or KANBAN and documentation of the process and its results. The focus should be on the agile execution - including the standards of the chosen methodology but also focusing on the defined and created artifacts.

Learning Outcomes

Agile Software Development Techniques and Methods

On successful completion, students will be able to

- analyze and assess problems and risks of industrial software development and their consequences for development processes.
- know and understand the basic principles of agile software engineering.
- analyze practical scenarios and independently apply suitable methods and tools of agile software engineering.

Project: Agile Software Development Techniques and Methods

On successful completion, students will be able to

- independently apply the basic principles of agile methodologies in software engineering in smaller projects.
- independently analyze and evaluate the advantages and disadvantages of agile software engineering in practical 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 fields of Computer Science & Software Development	All Master Programs in the IT & Technology field

Agile Software Development Techniques and Methods

Course Code: DLMIWNF01_E

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

Course Description

Agile software development means simplifying software processes by concentrating on the main activities and implementing them with pragmatic principles of software engineering. This course provides an overview of the topic and differentiates agile software development from plan-driven development processes. In addition, the course teaches which mixture of techniques and procedures from agile and plan-driven software development is best suited for which situations.

Course Outcomes

On successful completion, students will be able to

- analyze and assess problems and risks of industrial software development and their consequences for development processes.
- know and understand the basic principles of agile software engineering.
- analyze practical scenarios and independently apply suitable methods and tools of agile software engineering.

Contents

1. Features and Principles of Agility
   - 1.1 Features and Challenges of Software Projects
   - 1.2 Classification of Uncertainty
   - 1.3 Comparison of Agile and Classic Software Development
   - 1.4 Principles of Agility
2. Agility in Small Teams with Scrum
   - 2.1 Basics and General Setup with Scrum
   - 2.2 Central Management Artifact: Product Backlog
   - 2.3 Other Management Artifacts
3. Agile Portfolio and Project Management
   - 3.1 Planning Levels in Agile Project Management
   - 3.2 Agile Portfolio Management
   - 3.3 Organization of Several Teams in One Project
   - 3.4 Product and Release Planning

4. Agile Requirements and IT Architecture Management
   - 4.1 Requirements Engineering in Agile Projects
   - 4.2 Architecture Management in Agile Projects

5. Agile Testing
   - 5.1 Basics and Requirements for the QA Organization
   - 5.2 Testing Levels and Agility
   - 5.3 Test Automation

6. Agile Delivery and Deployment
   - 6.1 Basics and Continuous Delivery Pipeline
   - 6.2 Continuous Build and Continuous Integration
   - 6.3 Acceptance Tests, Load Tests and Continuous Deployment

Literature

Compulsory Reading

Further Reading

- Cockburn, A. (2007). Agile software development: The cooperative game (2nd ed.). Addison-Wesley.
- Crispin, L. (2008). Agile testing: A practical guide for testers and Agile teams. Addison-Wesley.
- Highsmith, J. (2009). Agile project management: Creating innovative products. Addison-Wesley.
- Rubin, K. S. (2012). Essential Scrum: A practical guide to the most popular Agile process. Addison-Wesley.
- Schwaber, K. (2014). Agile project management with Scrum. Microsoft Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Project: Agile Software Development Techniques and Methods

Course Code: DLMIWNF02_E

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

Course Description

In this course, students acquire a deeper understanding of the learned techniques and methods of agile software development by applying them in a small project. In consultation with the tutor, students select a topic for their project from the provided topic catalog, carry out the project using agile techniques and methods, and describe the project and their experiences in a 12-15-page project report.

Course Outcomes

On successful completion, students will be able to

- independently apply the basic principles of agile methodologies in software engineering in smaller projects.
- independently analyze and evaluate the advantages and disadvantages of agile software engineering in practical scenarios.

Contents

- An up-to-date catalog of topics provided in the module's online platform offers the basis of the module's content and can be supplemented or updated by the course instructor.

Literature

Compulsory Reading

Further Reading

- Cooke, J. L. (2012). Everything You Want to Know about Agile - How to Get Agile Results in a Less-than-agile Organization. IT Governance Publishing.
- Kneuper R. (2018). Software Processes and Life Cycle Models. An Introduction to Modeling, Using and Managing Agile, Plan-Driven and Hybrid Processes. Springer.
- McKenna, D. (2016). The Art of Scrum: How Scrum Masters Bind Dev Teams and Unleash Agility. Apress.
- Stamelos I. G. & Sfetsos P. (2007). Agile Software Development Quality Assurance. IGI Global.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Mobile Software Engineering

Module Code: DLMIWMB_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Marian Benner-Wickner (Mobile Software Engineering I) / Prof. Dr. Marian Benner-Wickner (Mobile Software Engineering II)

Contributing Courses to Module

- Mobile Software Engineering I (DLMIWMB01_E)
- Mobile Software Engineering II (DLMIWMB02_E)

Module Exam Type

Module Exam	Split Exam
	Mobile Software Engineering I • Study Format "Distance Learning": Written Assessment: Case Study Mobile Software Engineering II • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Mobile Software Engineering I

- Basics of Mobile Software Development
- Android System Architecture
- Development Environment
- Core Components of an Android App
- Interaction Between Application Components
- Advanced Techniques

Mobile Software Engineering II

Design, implementation and documentation of small, mobile applications based on a specific task.

Learning Outcomes

Mobile Software Engineering I

On successful completion, students will be able to

- identify the differences and peculiarities of software development for mobile systems and explain them.
- differentiate various activities, roles and risks in the development, operation and maintenance of mobile software systems.
- explain and distinguish the architecture and technical features of the Android platform.
- independently create mobile software systems to solve specific problems for the Android platform.

Mobile Software Engineering II

On successful completion, students will be able to

- independently design and prototype a small mobile application to solve a targeted task.
- recognize typical problems and challenges in the practical implementation od small mobile applications.
- document the design and implementation of self-developed small, mobile applications.

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 Master Programs in the IT & Technology field

Mobile Software Engineering I

Course Code: DLMIWMB01_E

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

Course Description

Using the mobile platform "Android" as an example, the course teaches how the programming of mobile applications (Apps) differs from the development of browser-based information systems, which technologies and programming concepts are typically used, and what typical challenges there are in app development for business applications.

Course Outcomes

On successful completion, students will be able to

- identify the differences and peculiarities of software development for mobile systems and explain them.
- differentiate various activities, roles and risks in the development, operation and maintenance of mobile software systems.
- explain and distinguish the architecture and technical features of the Android platform.
- independently create mobile software systems to solve specific problems for the Android platform.

Contents

1. Basics of Mobile Software Development
   - 1.1 Special Features of Mobile Devices
   - 1.2 Special Features of Mobile Software Development
   - 1.3 Classification of Mobile Devices
   - 1.4 The Android Platform
2. Android System Architecture
   - 2.1 The Android System
   - 2.2 Security
   - 2.3 Communication with Networks
3. Development Environment
   - 3.1 Android Studio
   - 3.2 First App and Emulator Test
   - 3.3 Application Deployment

4. Core Components of an Android App
   - 4.1 Overview of the Components of an Android App
   - 4.2 Activities, Layouts and Views
   - 4.3 Resources
   - 4.4 Summary in One App
   - 4.5 Graphic Design

5. Interaction Between Application Components
   - 5.1 Intents
   - 5.2 Services
   - 5.3 Broadcast Receiver

6. Advanced Techniques
   - 6.1 Threading
   - 6.2 Application Memory

Literature

Compulsory Reading

Further Reading

- Allen, G. (2021). Android for Absolute Beginners: Getting Started with Mobile Apps Development Using the Android Java SDK. Apress.
- Google Inc. (2022a). Android Developer Guides [available on internet].
- Hagos, T. (2020). Learn Android Studio 4 : Efficient Java-Based Android Apps Development. 2nd ed. Apress.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Mobile Software Engineering II

Course Code: DLMIWMB02_E

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

Course Description

In this course, students independently create a mobile application and document its design and implementation.

Course Outcomes

On successful completion, students will be able to

- independently design and prototype a small mobile application to solve a targeted task.
- recognize typical problems and challenges in the practical implementation od small mobile applications.
- document the design and implementation of self-developed small, mobile applications.

Contents

- Design, implementation and documentation of small, mobile applications based on a specific task. Possible topics are for example:
  - A radio app to improve the exchange between listeners and the station in general, but especially between listeners and radio hosts.
  - An app that allows a group of board game fans to better organize their regular evening game date.
  - An app that thesis supervisors can use to improve their supervision processes.

Literature

Compulsory Reading

Further Reading

- Allen, G. (2021). Android for absolute beginners getting started with mobile apps development using the Android Java SDK. Apress.
- Google Inc. (ed.) (2022a). Android Developer Guide [available on internet].
- Google Inc. (ed.) (2022b). Android Studio [available on internet].
- Hagos, T. (2020). Learn Android Studio 4 : Efficient Java-Based Android Apps Development: 2nd ed. Apress.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Cloud Computing

Module Code: DLMWIWCC_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ DLMWIWCC01_E ▪ none	MA	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. Andrew Adjah Sai (Introduction to Cloud Computing and Serverless Computing) / Prof. Dr. Andrew Adjah Sai (Project: Cloud Computing)

Contributing Courses to Module

- Introduction to Cloud Computing and Serverless Computing (DLMWIWCC01_E)
- Project: Cloud Computing (DLMWIWCC02_E)

Module Exam Type

Module Exam	Split Exam
	Introduction to Cloud Computing and Serverless Computing • Study Format "Distance Learning": Exam, 90 Minutes Project: Cloud Computing • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Introduction to Cloud Computing and Serverless Computing

- Cloud Computing Basics
- Service and Deployment Models for Cloud Computing
- Security and Privacy in the Cloud
- Cloud Computing Provider
- Typical Business Applications in the Cloud

Project: Cloud Computing

Identification of a use case, ideation, design and development of a custom cloud application, that runs on a cloud provider such as Amazon AWS or Microsoft Azure.

Learning Outcomes

Introduction to Cloud Computing and Serverless Computing

On successful completion, students will be able to

- know and understand definitions and categorizations of cloud computing,
- describe the underlying technologies that enable cloud computing,
- explain and evaluate service models of the cloud,
- understand and assess security risks of cloud solutions for enterprises,
- differentiate between cloud providers on the market and compare their services,
- evaluate business applications in the cloud.

Project: Cloud Computing

On successful completion, students will be able to

- plan, implement and document a cloud based development project,
- identify a suitable cloud service provider and assess their available services for deployment of a recipe-based cloud architecture,
- identify and evaluate typical problems in different project phases of cloud solution development by using appropriate methods,
- answer and evaluate business-relevant questions for evaluating a cloud solution.

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 Master Programs in the IT & Technology field

Introduction to Cloud Computing and Serverless Computing

Course Code: DLMWIWCC01_E

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

Course Description

Cloud computing stands for technical services, software products and infrastructures that can be called up at any time and are provided decentrally via the Internet. They cover the increasing requirements of the digital corporate world with scalable and flexible solutions. The aim of this course is therefore to teach basic concepts as well as service and deployment models of cloud computing. The course enables students to identify and evaluate suitable use cases in the business world for cloud solutions. The course first reviews basic cloud computing terminology and classifications. Then it describes necessary technology that have made cloud computing possible. Afterwards, opportunities and risks of using cloud solutions are reflected and evaluated. Based on this, typical cloud service models are discussed and essential security concepts for cloud solutions are presented. After an overview of central players in the cloud market, typical use cases in the business world are shown. Additionally to the technical aspects, this course also provides a basic understanding of the use and usability of cloud solutions in the business environment.

Course Outcomes

On successful completion, students will be able to

- know and understand definitions and categorizations of cloud computing,
- describe the underlying technologies that enable cloud computing,
- explain and evaluate service models of the cloud,
- understand and assess security risks of cloud solutions for enterprises,
- differentiate between cloud providers on the market and compare their services,
- evaluate business applications in the cloud.

Contents

1. Cloud Technologies Basics
   - 1.1 Definition and Categories of Cloud Computing
   - 1.2 History and Evolution of Cloud Computing and its Technology
   - 1.3 Distinguishing Cloud Computing from related Concepts (Grid Computing, ASP, etc.)
   - 1.4 Opportunities and Risks of using Cloud Computing

2. Technologies enabling Cloud Computing
   - 2.1 Internet/Web 2.0
   - 2.2 Data Center
   - 2.3 Virtualization
   - 2.4 Containerization

3. Service Models in the Cloud
   - 3.1 Infrastructure as a Service (IaaS)
   - 3.2 Platform as a Service (PaaS)
   - 3.3 Software as a Service (SaaS)
   - 3.4 Function as a Service (FaaS).

4. Operation Models for Cloud Computing
   - 4.1 Public Cloud
   - 4.2 Private Cloud
   - 4.3 Community Cloud
   - 4.4 Hybrid Cloud

5. Cloud Security and Privacy
   - 5.1 Typical Security Risks of Applications, Interfaces and Data
   - 5.2 Best Practices for Cloud Encryption and Security Architecture
   - 5.3 Aspects of Data Protection

6. Cloud Provider
   - 6.1 Overview of the Global Market of Cloud Providers
   - 6.2 Provider Example of the "Big-4" (AWS, IBM, Google and Microsoft)

7. Business Use Cases and Application Examples
   - 7.1 Business Drivers for Cloud Computing
   - 7.2 Typical Application Examples (Data Analytics, ERP Solutions, IOT, Blockchain, and others)

Literature
Compulsory Reading
Further Reading ▪ Chang, V., Walters, R. J. & Wills, G. (2015). Delivery and adoption of cloud computing services in contemporary organizations. IGI Global. ▪ Freeman, E. & Harvey, N. (2020). 97 things every cloud engineer should know. O'Reilly Media. ▪ Longbottom, C. (2017). Evolution of cloud computing: How to plan for change. BCS The Chartered Institute for IT. ▪ Ramachandran, M. (2016). Software security requirements management as an emerging cloud computing service. International Journal of Information Management, 36(4),580–590. ▪ Vacca, J. R. (2017). Cloud computing security: Foundations and challenges. CRC Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Project: Cloud Computing

Course Code: DLMWIWCC02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	DLMWIWCC01_E

Course Description

In a world of digital entertprises, cloud computing plays a crucial role in the design of modern, scalable and flexible enterprise solutions. The potential is huge: Moving the company's own infrastructure to the cloud, hosting complex platform and software solutions in the cloud or provide simple and cost-effective services using serverless architectures are some examples of applied Cloud Computing. The aim of this course is to identify a real life use case for cloud computing in the context of an organization and to develop an appropriate cloud-based application prototype. The focus lays on the design and implementation using existing cloud service providers. Furthermore business-critical issues, such as feasibility, scalability, security and costs, are also to be evaluated and documented.

Course Outcomes

On successful completion, students will be able to

- plan, implement and document a cloud based development project,
- identify a suitable cloud service provider and assess their available services for deployment of a recipe-based cloud architecture,
- identify and evaluate typical problems in different project phases of cloud solution development by using appropriate methods,
- answer and evaluate business-relevant questions for evaluating a cloud solution.

Contents

- In the Project: Cloud Computing, students will demonstrate the knowledge, skills and competencies to identify, design and develop a cloud-based application prototype for a virtual enterprise. Students will develop ideas and proposals for a solution based on a given problem or an independently identified problem. Based on the selection of a suitable provider, such as Amazon AWS, a specification and design of a proof-of-concept solution is developed and documented. The documentation also considers the evaluation of aspects such as security and scalability.

Literature
Compulsory Reading
Further Reading ▪ o. V. (o. J.): AWS Documentation. (URL: https://docs.aws.amazon.com/index.html [last accessed: 22.05.2020]) ▪ Wadia, Y. et al. (2019): Implementing AWS: Design, Build, and Manage your Infrastructure. Packt Publishing Ltd., Birmingham UK. ▪ Zalazar A.S./Ballejos L./Rodriguez S. (2017): Analyzing Requirements Engineering for Cloud Computing. In: Ramachandran M./Mahmood Z. (ed.): Requirements Engineering for Service and Cloud Computing. Springer, Cham. ▪ Zardari, S./Faniyi, F./Bahsoon R. (2013): Cloud-Based Goal Oriented Requirements Engineering. In: Mistrík, I. et. al. (ed.): Aligning Enterprise, System, and Software Architectures. IGI Global, Hershey PA.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Business Intelligence

Module Code: DLMIWBI_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Silke Vaas (Business Intelligence I) / N.N. (Business Intelligence II)

Contributing Courses to Module

- Business Intelligence I (DLMDSEBA01)
- Business Intelligence II (DLMIWBI02_E)

Module Exam Type

Module Exam	Split Exam
	Business Intelligence I • Study Format "Distance Learning": Written Assessment: Case Study • Study Format "myStudies": Written Assessment: Case Study Business Intelligence II • Study Format "Distance Learning": Written Assessment: Research Essay

Weight of Module

see curriculum

Module Contents

Business Intelligence I

- Motivation and Introduction
- Data Provisioning
- Data Warehouse
- Modeling Multidimensional Dataspaces
- Analytical Systems
- Distribution and Access
- Current and Future Business Intelligence Application Areas

Business Intelligence II

Elaborating and expanding on topics from Business Intelligence I in the context of a seminar paper.

Learning Outcomes

Business Intelligence I

On successful completion, students will be able to

- understand the motivations and use cases for, as well as fundamentals of, business intelligence.
- explain relevant types of data.
- know and disambiguate techniques and methods for modeling and dissemination of data.
- expound upon the techniques and methods for the generation and storage of information.
- select apposite business intelligence methods for given requirements.
- explain current and future business intelligence application areas.

Business Intelligence II

On successful completion, students will be able to

- work on current issues in the field of Business Intelligence.
- independently work on a current topic in the field of Business Intelligence using current and relevant literature (monographs and professional journals) and develop solution approaches.
- prepare methodically for the creation of the final master's thesis and to master the basics of scientific practice for the preparation of a 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 of Computer Science & Software Development	All Master Programs in the IT & Technology field

Business Intelligence I

Course Code: DLMDSEBA01

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

Course Description

Business Intelligence is about the generation of information based on operational data. It is used to enable goal-oriented management practices as well as the optimization of relevant business activities. This course introduces and discusses techniques, methods, and models for data provisioning and the generation, analysis, and dissemination of information.

Course Outcomes

On successful completion, students will be able to

- understand the motivations and use cases for, as well as fundamentals of, business intelligence.
- explain relevant types of data.
- know and disambiguate techniques and methods for modeling and dissemination of data.
- expound upon the techniques and methods for the generation and storage of information.
- select apposite business intelligence methods for given requirements.
- explain current and future business intelligence application areas.

Contents

1. Motivation and Introduction
   - 1.1 Motivation and Historical Development of the Field
   - 1.2 Business Intelligence as a Framework
2. Data Provisioning
   - 2.1 Operative and Dispositive Systems
   - 2.2 The Data Warehouse Concept
   - 2.3 Architecture Variants
3. Data Warehouse
   - 3.1 The ETL-Process
   - 3.2 DWH and Data-Mart Concepts
   - 3.3 ODS and Meta-Data
4. Modeling Multidimensional Dataspaces

4.1 Data Modeling
4.2 OLAP-Cubes
4.3 Physical Storage Concepts
4.4 Star-Schema and Snowflake-Schema
4.5 Historization

5. Analytical Systems
   5.1 Freeform Data Analysis and OLAP
   5.2 Reporting Systems
   5.3 Model-Based Analytical Systems
   5.4 Concept-Oriented Systems

6. Distribution and Access
   6.1 Information Distribution
   6.2 Information Access

7. Current and Future Business Intelligence Application Areas
   7.1 Mobile Business Intelligence
   7.2 Predictive and Prescriptive Analytics
   7.3 Artificial Intelligence
   7.4 Agile Business Intelligence

Literature

Compulsory Reading

Further Reading

- Grossmann, W., Rinderle-Ma, S. (2015). Fundamentals of Business Intelligence. Berlin/ Heidelberg: 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.
- Sharda, R., Delen, D., & Turban, E. (2017). Business intelligence, analytics, and data science: A managerial perspective. Pearson.
- Sherman, R. (2014). Business intelligence guidebook: From data integration to analytics. Morgan Kaufmann.
- Turban, E., Sharda, R., Aronson, J., & King, D. (2010). Business intelligence. A managerial approach (2nd ed.). Prentice Hall.
- Vaisman, A., & Zimányi, E. (2016). Data warehouse systems: Design and implementation. Springer.

Study Format Distance Learning

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

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

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

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

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

Business Intelligence II

Course Code: DLMIWBI02_E

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

Course Description

Using and expanding the content taught in the course Business Intelligence I, the students independently create a seminar paper in this course. Accordingly, the students will be familiarized with the methodology of the development of a seminar paper. In particular, the areas of research, methodology and analysis will be addressed. In consultation with the seminar instructor, the students select a specific topic from the provided catalog and develop a 7-10 page seminar paper considering the specifications of the guidelines for seminar papers. In doing so, the students will also be familiarized with the topic of literature research. Intermediate steps in the development of the seminar paper will be discussed online or in the tutorials. In these discussions, special attention will be given to the logic of the methodology and the analysis.

Course Outcomes

On successful completion, students will be able to

- work on current issues in the field of Business Intelligence.
- independently work on a current topic in the field of Business Intelligence using current and relevant literature (monographs and professional journals) and develop solution approaches.
- prepare methodically for the creation of the final master's thesis and to master the basics of scientific practice for the preparation of a seminar paper.

Contents

- In this course, a selected topic area from the course Business Intelligence I is expanded upon through the development of a seminar paper. A current catalog of topics provided in the online platform of the module offers the basis in terms of content and can be supplemented or updated by the seminar instructor.

Literature

Compulsory Reading

Further Reading

- Computational Intelligence, Communications, and Business Analytics. Second International Conference, CICBA 2018, Kalyani, India, July 27–28, 2018, Revised Selected Papers, Part I.
- Grossmann, W. (2015). Fundamentals of Business Intelligence. Berlin: Springer.
- Loshin, D. (2012). Business Intelligence: The Savvy Manager's Guide. New York: Elsevier.
- Real-Time Business Intelligence and Analytics. International Workshops, BIRTE 2015, Kohala Coast, HI, USA, August 31, 2015, BIRTE 2016, New Delhi, India, September 5, 2016, BIRTE 2017, Munich, Germany, August 28, 2017, Revised Selected Papers.
- Sharon J.A. & Juliet S. (2022). Efficient Business Intelligence Implementation: A Systematic Review. 2022 International Conference on Applied Artificial Intelligence and Computing (ICAAIC), Applied Artificial Intelligence and Computing (ICAAIC), 2022 International Conference on. May 2022:144-149.
- Sherman, R. (2014). Business Intelligence Guidebook: From Data Integration to Analytics. Ali Qhal EM. Role of Business Intelligence and Knowledge Management in Solving Business Problems. Technical Journal / Tehnicki Glasnik. 2022;16(3):371-378.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

Cyber Criminality

Module Code: DLMIMWCK_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ none ▪ DLMIMWCK01_E	MA	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. Jetzabel Maritza Serna- Olvera (Attack Scenarios and Incident Response) / Dr. Jetzabel Maritza Serna- Olvera (Project: Cyber Forensics)

Contributing Courses to Module

- Attack Scenarios and Incident Response (DLMIMWCK01_E)
- Project: Cyber Forensics (DLMIMWCK02_E)

Module Exam Type

Module Exam	Split Exam
	Attack Scenarios and Incident Response • Study Format "Distance Learning": Exam, 90 Minutes Project: Cyber Forensics • Study Format "Distance Learning": Portfolio

Weight of Module

see curriculum

Module Contents

Attack Scenarios and Incident Response

- Threat scenarios
- attack vectors
- Preventive measures
- Reactive measures
- Current situation of IT security

Project: Cyber Forensics

The project is concerned with the question of which procedure is suitable to react to computer-criminal incidents in a company. It deals with forensic procedures for the collection of evidence that can be used in court as well as recommendations for risk minimization, communication and prevention of such incidents. A current list of topics can be found in the Learning Management System.

Learning Outcomes

Attack Scenarios and Incident Response

On successful completion, students will be able to

- assess threat scenarios and their effects.
- name attack vectors and select adequate countermeasures.
- apply electronic evidence procedures to selected attack scenarios.
- develop preventive measures.
- identify reactive measures and assess their effectiveness.
- collect and evaluate information on the current threat situation.

Project: Cyber Forensics

On successful completion, students will be able to

- name basic methods and techniques of computer forensics and their limitations.
- identify the systems and business processes affected by a computer crime and carry out a risk assessment.
- recommend measures to secure electronic evidence and evaluate its usability in court.
- develop recommendations for incident communication, response and prevention.

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 Master Programs in the IT & Technology fields

Attack Scenarios and Incident Response

Course Code: DLMIMWCK01_E

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

Course Description

This course provides students with knowledge for identification and action planning in dealing with criminal offences in the digital environment. It describes how weaknesses in hardware and software and their application can be exploited for criminal activities. In addition, the course introduces typical threat scenarios and the ways in which attacking systems can penetrate a computer system. The course also introduces methods of electronic evidence and shows how legally usable information can be obtained in case of an attack. This is followed by a discussion of the development of preventive measures and the possibilities for reacting in the event of a concrete threat. The course concludes with a discussion of how information on the current security situation can be obtained from reports by security authorities (such as BSI, Europol, NCA, FBI).

Course Outcomes

On successful completion, students will be able to

- assess threat scenarios and their effects.
- name attack vectors and select adequate countermeasures.
- apply electronic evidence procedures to selected attack scenarios.
- develop preventive measures.
- identify reactive measures and assess their effectiveness.
- collect and evaluate information on the current threat situation.

Contents

1. Introduction
   - 1.1 Computer crime as distinct from other offences
   - 1.2 Vulnerabilities in computers and mobile devices
   - 1.3 An overview of malware
   - 1.4 Social engineering and the human factor
2. Criminal basis
   - 2.1 Identity abuse
   - 2.2 Theft of intellectual property
   - 2.3 Falsification of evidentiary data
   - 2.4 Computer fraud

3. Specific offences
   - 3.1 Data Theft
   - 3.2 Digital blackmailing
   - 3.3 Computer sabotage
   - 3.4 Industrial espionage

4. Attack vectors
   - 4.1 Attacks on Chip and Firmware Level
   - 4.2 Attacks at operating system level
   - 4.3 Attacks at network and server level
   - 4.4 Attacks at application level
   - 4.5 Attacks at the organizational level

5. IT forensics and electronic evidence
   - 5.1 Identification, localization and handling of polymorphisms
   - 5.2 Detection mechanisms
   - 5.3 Finding electronic evidence
   - 5.4 Data recovery and evidence recovery
   - 5.5 Legal limits and predictive policing

6. Preventive measures
   - 6.1 Measures on hardware level
   - 6.2 Access permission, authorization and authentication
   - 6.3 Awareness & Training
   - 6.4 Incident Response Planning

7. Reactive measures
   - 7.1 Initial assessment and extent of damage
   - 7.2 Prevention of persistent damage
   - 7.3 Collection, exchange and distribution of information
   - 7.4 Cooperation with security authorities and cooperation partners
   - 7.5 Recommended actions for companies

8. The current security situation
   - 8.1 Current reports of the safety authorities
   - 8.2 Evaluation of the recommendations of the safety authorities
   - 8.3 Current topics of the Europol Awareness Campaign

Literature
Compulsory Reading
Further Reading ▪ Sherman, A. T., DeLatte, D., Neary, M., Oliva, L., Phatak, D., Scheponik, T., Herman, G. L., & Thompson, J. (2018). Cybersecurity: Exploring core concepts through six scenarios. Cryptologia, 42(4), 337—377. ▪ Breitinger, F., & Baggili, I. (2019). Digital Forensics and Cyber Crime: 10th International EAI Conference, ICDF2C 2018, New Orleans, LA, USA, September 10—12, 2018, Proceedings (1st ed.). ▪ Lewis, J., & Baker, S. (2013). The economic impact of cybercrime and cyber espionage. McAfee. ▪ Forshaw, J. (2018). Attacking network protocols: A hacker's guide to capturing, analysis, and exploitation. No Starch Press.Chapter 2.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Project: Cyber Forensics

Course Code: DLMIMWCK02_E

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	DLMIMWCK01_E

Course Description

This project aims to create an action plan for digital investigation and incident handling for a given threat scenario. Starting with a concrete suspicion of a computer-criminal act (e.g. a suspected server attack, loss of customer data or manipulation of business data) the students plan to conduct a digital investigation for electronic evidence and to secure evidence that can be used in court. The data obtained will be used to evaluate risks for affected business processes and to make recommendations for incident treatment and prevention.

Course Outcomes

On successful completion, students will be able to

- name basic methods and techniques of computer forensics and their limitations.
- identify the systems and business processes affected by a computer crime and carry out a risk assessment.
- recommend measures to secure electronic evidence and evaluate its usability in court.
- develop recommendations for incident communication, response and prevention.

Contents

- The project aims to develop an action plan for conducting a digital investigation and incident management for a given threat scenario. Beginning with the concrete suspicion of a computer crime*, the students develop a plan of action that covers the following measures:
  - Localization of the affected systems (hardware and software)
  - Identification of the affected business processes
  - Risk assessment for the impact on affected business processes
  - Communication with internal departments, cooperation partners, customers and the public
  - Identification and preservation of relevant data
  - Examination of the data
  - Securing electronic evidence and its usability in court
  - Recommendations for prevention
  - The action plan should be written in such a way that it serves as a process template for continuous incident handling.

- Examples of suspicious cases are a suspected server attack, loss of customer data, manipulation of business data, publication of internal company data, suspicion of product piracy, inconsistency of electronic signatures in company documents, digital blackmailing of a decision maker or suspicion of industrial espionage.

Literature

Compulsory Reading

Further Reading

- ISO/IEC 27001 (2022): Information Security Management. Tech. rep.
- ISO/IEC 27001:2022.ISO/IEC 27002 (2022): Information Technology - Security Techniques - Code of Practice for Information Security Management. Tech. rep. ISO/IEC 27002:2022.
- NIST (2020): Security Controls for Federal Information Systems. Tech. rep. NIST SP-800-53 Rev. 5.
- CSA (Cloud Security Alliance) (2021): “Cloud Controls Matrix v4.”
- CSA (Cloud Security Alliance): “The Consensus Assessments Initiative Questionnaire v4.”
- Luna, J., Langenberg, R., Suri, N. (2012): “Benchmarking cloud security level agreements using quantitative policy trees.”, Proc. of ACM Workshop on Cloud computing security workshop, pp. 103–112.
- NIST Cloud Computing Reference Architecture and Taxonomy Working Group (2008): “Performance and Measurements Guide for Information Technology.” In: NIST 800-55 Revision 1.
- NIST Cloud Computing Reference Architecture and Taxonomy Working Group (2020): “Performance and Measurements Guide for Information Technology.” In: NIST 800-55 Revision 2.
- NIST (2013): “Security Controls for Federal Information Systems.” Tech. rep. NIST SP-800-53. 2013.
- CIS (2014): “Cloud Service Level Agreement Standardisation Guidelines.” Tech. rep. C-SIG SLA 2014. European Commission, C-SIG SLA.
- Pannetrat, A. et al (2013): “D2.1 Security-Aware SLA Specification Language and Cloud Security Dependency model.”

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

IT Law

Module Code: DLMIMWITR_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Mohammad Shackow (International IT Law) / N.N. (Seminar: Service Level Agreement, Licensing and Patenting)

Contributing Courses to Module

- International IT Law (DLMIMWITR01_E)
- Seminar: Service Level Agreement, Licensing and Patenting (DLMIMWITR02_E)

Module Exam Type

Module Exam	Split Exam
	International IT Law • Study Format "Distance Learning": Exam, 90 Minutes Seminar: Service Level Agreement, Licensing and Patenting • Study Format "Distance Learning": Written Assessment: Research Essay

Weight of Module

see curriculum

Module Contents

International IT Law

- Introduction
- E-Business and E-Commerce
- Intellectual Property
- Privacy and Data Protection
- Information Security and Computer Crime
- Online Media and Telecommunication

Seminar: Service Level Agreement, Licensing and Patenting

- The course provides students with specific knowledge to evaluate legal requirements of licensing for a given software, identify required services to maintain the software and evaluate the patentability of the software. For this purpose, methods for determining the framework conditions and the required paramteres are presented. The resulting legal requirements are summarized in a seminar paper:
  - Sotfware License Model
  - License Requirements Analysis
  - Plausibility Check
  - Risk Assessment
  - Recommendation for Software License Models
  - Service Level Agreement for the Maintenance of the Software
  - Identification of Service Requirements
  - Specification of Services
  - Requirements to Assess Effectiveness, Effort, and Availability of Services.
  - Requirements for the Continuous Improvement of Services
  - Specification of Quality Criteria (QoS)
  - Recommendations for Implementation
  - Patenting
  - Examination of the Fulfillment of the Requirements for Patent Protection
  - Argumentation of Novelty
  - Argumentation of Inventive Activity
  - Argumentation of Industrial Application
- The result should serve a legal department as a basis for drafting license and service agreements and provide necessary argumentation for a patent application.

Learning Outcomes

International IT Law

On successful completion, students will be able to

- identify and explain the differences between national, transnational and international legal systems.
- identify interfaces between general legal concepts and IT-relevant law.
- identify legal requirements for IT contracting and assess their impact on the (electronic) commercialization of IT products or services.
- assess the impact of the European Data Protection Regulation on business processes and make recommendations for implementation.
- identify the legal views of selected transnational institutions and to assess their impact on international IT law.

Seminar: Service Level Agreement, Licensing and Patenting

On successful completion, students will be able to

- select software licensing models for a chosen scenario and argue that selection.
- identify and specify requirements for software maintenance services and provide recommendations for implementation.
- derive parameters from the above findings that need to be included in a service contract.
- evaluate the patentability of a software-based solution and to derive recommendations for a patent attorney from this.

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

International IT Law

Course Code: DLMIMWITR01_E

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

Course Description

This course presents in depth national and international legal framework conditions of information processing for companies. After an examination of the differences between international legal systems, an introduction is given to those legal constructs which serve as a basis for the development of IT-relevant legislation. Subsequently, areas of law are discussed from the perspective of concrete application-oriented business scenarios, such as contract law, licensing and patenting.An introduction to the EU legal system is followed by a detailed discussion of the European General Data Protection Regulation (GDPR), which gains increasingly international interest. This leads into a consideration of transnational legal systems and concludes with recommendations from supranational organizations.

Course Outcomes

On successful completion, students will be able to

- identify and explain the differences between national, transnational and international legal systems.
- identify interfaces between general legal concepts and IT-relevant law.
- identify legal requirements for IT contracting and assess their impact on the (electronic) commercialization of IT products or services.
- assess the impact of the European Data Protection Regulation on business processes and make recommendations for implementation.
- identify the legal views of selected transnational institutions and to assess their impact on international IT law.

Contents

1. Introduction
   - 1.1 General Concepts of Law
   - 1.2 Areas of Law
   - 1.3 International, Transnational and EU Law
   - 1.4 Definition and Scope of IT Law
   - 1.5 International, Transnational and European IT Law
   - 1.6 Law in Cross-Border Systems

2. E-Business and E-Commerce
   - 2.1 General Terms and Conditions of Business
   - 2.2 Electronic Commerce
   - 2.3 IT Contracts
   - 2.4 Intermediaries and Platforms
   - 2.5 Antritrust Law and IT

3. Intellectual Property
   - 3.1 Basic Concepts of Intellectual Property
   - 3.2 Copyright
   - 3.3 Software Copyright and Software Licensing
   - 3.4 Free and Open Licensing
   - 3.5 Patenting of Software

4. Privacy and Data Protection
   - 4.1 Basic Concepts of Privacy and Data Protection
   - 4.2 European General Data Protection Regulation (GDPR)
   - 4.3 Implementation Approaches of the GDPR
   - 4.4 International Data Transfer

5. Information Security and Computer Crime
   - 5.1 Information Security Law
   - 5.2 Electronic Signatures and Digital Identities
   - 5.3 Cybercrime

6. Online Media and Telecommunication
   - 6.1 Basics of Online Media Law
   - 6.2 Social Media and Freedom of Expression
   - 6.3 Fundamentals of Telecommunications Law
   - 6.4 Internet and Domain Law

Literature
Compulsory Reading
Further Reading ▪ Lloyd, I. (2020): Information Technology Law. Oxford University Press, Oxford. ▪ Lutzi, T. (2020): Private International Law Online: Internet Regulation and Civil Liability in the EU. Oxford University Press, Oxford. ▪ Nirmal, B. C. & Singh, R. K. (ed.) (2018): Contemporary Issues in International Law. Environment, International Trade, Information Technology and Legal Education. Springer, Berlin. ▪ Savin, A. (2017): EU Internet Law. Edward Elgar Publishing. ▪ Siems, M. (2018): Comparative law. Cambridge University Press, Cambridge. ▪ Thirlway, H. (2019): The sources of international law. Oxford University Press, Oxford.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Seminar: Service Level Agreement, Licensing and Patenting

Course Code: DLMIMWITR02_E

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

Course Description

The seminar serves to determine the legal requirements of licensing, Service Level Agreements (SLA) and patentability of software. For this purpose, methods for determining the framework conditions and required parameters are presented, applied to a selected software scenario, and summarized in a report. This report aims to serve a legal department as a basis for contract design and to provide the necessary argumentation for a patent application.

Course Outcomes

On successful completion, students will be able to

- select software licensing models for a chosen scenario and argue that selection.
- identify and specify requirements for software maintenance services and provide recommendations for implementation.
- derive parameters from the above findings that need to be included in a service contract.
- evaluate the patentability of a software-based solution and to derive recommendations for a patent attorney from this.

Contents

- The course provides students with specific knowledge to evaluate legal requirements of licensing for a given software, identify required services to maintain the software and evaluate the patentability of the software. For this purpose, methods for determining the framework conditions and the required paramteres are presented. The resulting legal requirements are summarized in a seminar paper:
  - Sotfware License Model
  - License Requirements Analysis
  - Plausibility Check
  - Risk Assessment
  - Recommendation for Software License Models
  - Service Level Agreement for the Maintenance of the Software
  - Identification of Service Requirements
  - Specification of Services
  - Requirements to Assess Effectiveness, Effort, and Availability of Services.
  - Requirements for the Continuous Improvement of Services

- Specification of Quality Criteria (QoS)
- Recommendations for Implementation
- Patenting
- Examination of the Fulfillment of the Requirements for Patent Protection
- Argumentation of Novelty
- Argumentation of Inventive Activity
- Argumentation of Industrial Application

- The result should serve a legal department as a basis for drafting license and service agreements and provide necessary argumentation for a patent application.

Literature

Compulsory Reading

Further Reading

- Kim, K., Lee, J. & Gopal, A. (2022): Soft but strong: Software-based innovation and product differentiation in the IT Hardware industry. MIS Quarterly. Jun2022, Vol. 46 Issue 2, p. 1273-1294, MIS Research Center, Minneapolis (USA).
- Li, Y. (2019): The Current Dilemma and Future of Software Patenting. IIC - International Review of Intellectual Property and Competition Law. 50(7), p. 823-859, Springer, Berlin (Germany).
- Milanovic, N. (2011): Engineering Reliable Service Oriented Architecture - Managing Complexity and Service Level Agreements. IGI Global, Hershey (USA).
- Mistrik, I., Tang, A., Bahsoon, R. & Stafford, J. (2013): Aligning Enterprise, System, and Software Architectures. Chapter 4: Software Licenses, Open Source Components, and Open Architectures. IGI Global, Hershey (USA).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

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

IT Governance and Compliance

Module Code: DLMWIWITGC_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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 (Corporate Governance of IT, Compliance, and Law) / N.N. (Seminar: IT Governance, Compliance and Law in practice)

Contributing Courses to Module

- Corporate Governance of IT, Compliance, and Law (DLMIGCR01-01_E)
- Seminar: IT Governance, Compliance and Law in practice (DLMWIWITGC01_E)

Module Exam Type

Module Exam	Split Exam
	Corporate Governance of IT, Compliance, and Law • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Seminar: IT Governance, Compliance and Law in practice • Study Format "Distance Learning": Written Assessment: Research Essay

Weight of Module

see curriculum

Module Contents

Corporate Governance of IT, Compliance, and Law

- IT Governance: Motivation and Challenges
- COBIT Framework
- IT Compliance
- Basic IT Protection According to BSI
- Introduction to IT Service Management
- IT Law

Seminar: IT Governance, Compliance and Law in practice

The aim of the seminar is to deepen the already gained knowledge in the field of IT Governance, Compliance and Law, to apply it independently to specific questions and to discuss it scientifically.

Learning Outcomes

Corporate Governance of IT, Compliance, and Law

On successful completion, students will be able to

- explain the terms IT governance and IT compliance.
- categorize typical processes and activities from the area of IT governance and IT compliance.
- give an overview of the COBIT framework and its elements.
- give an overview of IT-Governance and explain its structure.
- reproduce important laws and regulations in the field of IT law and explain their areas of application.

Seminar: IT Governance, Compliance and Law in practice

On successful completion, students will be able to

- independently analyze and scientifically answer a question in the field of "IT Governance, Compliance and Law" using English literature.
- independently apply existing knowledge on IT Governance, Compliance and Law and to discuss given questions in depth.
- critically examine a given topic and identify potential problems or negative impacts so that decisions could be made based on that.

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 Master Programs in the IT & Technology field

Corporate Governance of IT, Compliance, and Law

Course Code: DLMIGCR01-01_E

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

Course Description

In this course, students learn terms and frameworks related to IT governance and IT compliance. First, a short introduction and an overview of the different aspects of IT governance and IT compliance are given; then, COBIT and IT basic protection are explained as two frameworks that are used in industrial practice. In addition, this course will introduce and discuss important legal frameworks and standards related to IT law.

Course Outcomes

On successful completion, students will be able to

- explain the terms IT governance and IT compliance.
- categorize typical processes and activities from the area of IT governance and IT compliance.
- give an overview of the COBIT framework and its elements.
- give an overview of IT-Governance and explain its structure.
- reproduce important laws and regulations in the field of IT law and explain their areas of application.

Contents

1. IT Governance: Motivation and Challenges
   - 1.1 Governance and IT Governance
   - 1.2 Frameworks for IT Governance
   - 1.3 Typical IT Governance, Service Management, and Security Frameworks and Standards
2. COBIT Framework
   - 2.1 Overview of the Elements of COBIT
   - 2.2 Governance and Management Objectives
   - 2.3 Use of COBIT and COBIT Design Factors
   - 2.4 The Target Cascade of COBIT
3. IT Compliance
   - 3.1 Introduction to IT Compliance
   - 3.2 Examples of National and International Guidelines: Risk Management Standards and Frameworks

3.3 IT Compliance: Typical Measures

4. Basic IT Protection According to BSI
   - 4.1 Overview and Structure
   - 4.2 Approach to IT Security Governance
   - 4.3 Usage Example of IT Security Governance

5. Introduction to IT Service Management
   - 5.1 What is Information Technology Service Management?
   - 5.2 What is ITIL® V4?
   - 5.3 What is ISO/IEC 20000-1:2018?
   - 5.4 Other ITSM Frameworks and Standards

6. IT Law
   - 6.1 Overview of Relevant Laws
   - 6.2 Protection of Intellectual Property
   - 6.3 IT Contracts
   - 6.4 Privacy

Literature

Compulsory Reading

Further Reading

- Cervone, H. F. (2017). Implementing IT governance: A primer for informaticians. Digital Library Perspectives, 33(4), 282—287.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

Seminar: IT Governance, Compliance and Law in practice

Course Code: DLMWIWITGC01_E

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

Course Description

The aim of this course is to deepen the already gained knowledge in the field of IT Governance, Compliance and Law in a seminar paper, to apply it independently to specific questions and to discuss it scientifically.

Course Outcomes

On successful completion, students will be able to

- independently analyze and scientifically answer a question in the field of "IT Governance, Compliance and Law" using English literature.
- independently apply existing knowledge on IT Governance, Compliance and Law and to discuss given questions in depth.
- critically examine a given topic and identify potential problems or negative impacts so that decisions could be made based on that.

Contents

- The seminar deals with current, practical issues and challenges in the areas of IT Governance, Compliance and Law. In particular, the focus is on topics related to IT governance and ensuring compliance with legal requirements. Challenges in practical implementations are also considered, in particular, against the background of current methodological, technical, and social developments regarding IT processes, IT architectures and IT control. Specific questions are prepared, interpreted, evaluated, and condensed into scientific statements by the student as well as documented within a written seminar paper. The current catalog of topics on the learning platform forms the content basis of the module and is continuously supplemented and updated.

Literature
Compulsory Reading
Further Reading ▪ Anoruo, C. (2019): Employing COBIT 2019 for Enterprise Governance Strategy. COBIT Focus. 10/28/2019, p. 1-13. ▪ Bernard, P. (2012): COBIT® 5 – A Management Guide. Van Haren Publishing, Zaltbommel (NL). ▪ Calder, A. (2020): Cyber Security Handbook – Prepare for, Respond to and Recover from Cyber Attacks with the IT Governance Cyber Resilience Framework (CRF). IT Governance Publishing, Ely (UK). ▪ Juiz, C. & Gomez, B. (2021): Delving Into the IT Governance- Management Communication Interface: A Scoping Review. International Journal of Digital Strategy, Governance, & Business Transformation (IJDSGBT). 2021, Vol. 11 Issue 1, p. 1-37, Hershey (USA). ▪ Olorunojowon, Z. (2018): Tips for Implementing IT Governance With COBIT 5. COBIT Focus. 9/4/2018, p. 1-6.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

Cybersecurity

Module Code: DLMWIWCS_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	5	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. Ralf Kneuper (Cyber Security and Data Protection) / N.N. (Project: Applied IT Security)

Contributing Courses to Module

- Cyber Security and Data Protection (DLMCSITSDP01)
- Project: Applied IT Security (DLMWIWCS01_E)

Module Exam Type

Module Exam	Split Exam
	Cyber Security and Data Protection • Study Format "Distance Learning": Oral Assignment • Study Format "myStudies": Oral Assignment Project: Applied IT Security • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Cyber Security and Data Protection

- Foundations of Data Protection and Cyber Security
- Data Protection
- Applying Data Protection
- Building Blocks of Cyber Security
- Cyber Security Management
- Cryptography
- Cryptographic Applications

Project: Applied IT Security

The aim of the project is to apply the knowledge acquired in the field of IT security and data protection in practice and to discuss it scientifically. For this purpose, given example scenarios will be analyzed, evaluated and recommendations for action formulated.

Learning Outcomes

Cyber Security and Data Protection

On successful completion, students will be able to

- explain the core concepts of cyber security, data protection, and cryptography including their differences and relationships.
- compare the approaches to data protection within in different legal systems.
- apply data protection concepts to data science and other application scenarios.
- analyze application scenarios to identify the adequate cyber security management measures that should be implemented.
- explain the different approaches to data protection in different cultures.

Project: Applied IT Security

On successful completion, students will be able to

- analyze and evaluate given case studies regarding protection requirements and relevant legal standards and formulate recommendations for action.
- analyze and evaluate given case studies with regards to typical attack targets and scenarios and formulate recommendations for action.
- analyze existing counter measures for adequacy.
- derive specific measures based on the protection level determination.

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 Master Programs in the IT & Technology field

Cyber Security and Data Protection

Course Code: DLMCSITSDP01

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

Course Description

With the increasing digitization and networking of IT systems, the need for safeguarding systems and the data processed by these systems has grown. The aim of this module is to provide an understanding of security measures needed, cyber security including cryptography, and data protection. While the need for cyber security is similar around the world, different cultures have different expectations regarding data protection and privacy. Nevertheless, personal data are often processed outside the country where the affected individuals live. Hence, the cultural aspects of data protection need to be taken into account wherever the data are processed. This course provides an overview of the main cyber security measures in different application scenarios, as well as their integration into an Information Security Management System, with particular focus on the relevant ISO/IEC 270xx family of standards. Cryptography provides an important tool set for cyber security and is used in many different application scenarios such as secure Internet protocols and block chain.

Course Outcomes

On successful completion, students will be able to

- explain the core concepts of cyber security, data protection, and cryptography including their differences and relationships.
- compare the approaches to data protection within in different legal systems.
- apply data protection concepts to data science and other application scenarios.
- analyze application scenarios to identify the adequate cyber security management measures that should be implemented.
- explain the different approaches to data protection in different cultures.

Contents

1. Foundations of Data Protection and Cyber Security
   - 1.1 Terminology and Risk Management
   - 1.2 Core Concepts of Cyber Security
   - 1.3 Core Concepts of Data Protection and Privacy
   - 1.4 Core Concepts of Cryptography
   - 1.5 Legal Aspects
2. Data Protection

- 2.1 Basic Concepts of Data Protection (ISO/IEC 29100, Privacy by Design)
- 2.2 Data Protection in Europe: the GDPR
- 2.3 Data Protection in the USA
- 2.4 Data Protection in Asia

3. Applying Data Protection
   - 3.1 Anonymity and Pseudonyms (k-Anonymity, i-Diversity, Differential Privacy)
   - 3.2 Data Protection in Data Science and Big Data
   - 3.3 User Tracking in Online Marketing
   - 3.4 Cloud Computing

4. Building Blocks of Cyber Security
   - 4.1 Authentication, Access Management and Control
   - 4.2 Cyber Security in Networks
   - 4.3 Developing Secure IT Systems (OWASP, etc.)

5. Cyber Security Management
   - 5.1 Security Policy
   - 5.2 Security and Risk Analysis
   - 5.3 The ISO 270xx Series
   - 5.4 IT Security and IT Governance
   - 5.5 Example: Cyber Security for Credit Cards (PCI DSS)

6. Cryptography
   - 6.1 Symmetric Cryptography
   - 6.2 Asymmetric Cryptography
   - 6.3 Hash Functions
   - 6.4 Secure Data Exchange (Diffie-Hellman, Perfect Forward Secrecy, etc.)

7. Cryptographic Applications
   - 7.1 Digital Signatures
   - 7.2 Electronic Money
   - 7.3 Secure Internet Protocols (TLS, IPSec, etc.)
   - 7.4 Block Chain

Literature
Compulsory Reading
Further Reading ▪ Amoroso, E., & Amoroso, M. (2017). From CIA to APT: An introduction to cyber security. Independently published. ▪ National Institute of Standards and Technology. (2018). Framework for improving critical infrastructure cybersecurity. ▪ Paar, C., & Pelzl, J. (2011). Understanding cryptography: A textbook for students and practitioners. Springer. ▪ Walker, B. (2019). Cyber security comprehensive beginners guide to learn the basics and effective methods of cyber security. Independently published.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

Project: Applied IT Security

Course Code: DLMWIWCS01_E

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

Course Description

The aim of the course is to practically apply and discuss the knowledge acquired in the field of IT security and data protection in a project report. For this purpose, given example scenarios are analyzed, evaluated and recommendations for action are formulated.

Course Outcomes

On successful completion, students will be able to

- analyze and evaluate given case studies regarding protection requirements and relevant legal standards and formulate recommendations for action.
- analyze and evaluate given case studies with regards to typical attack targets and scenarios and formulate recommendations for action.
- analyze existing counter measures for adequacy.
- derive specific measures based on the protection level determination.

Contents

- In this course, specific issues in the field of IT security are analyzed, evaluated, and recommendations for action are developed. The focus is on the holistic consideration of specific scenarios under the aspect of IT security and data protection. Specific questions and scenarios are provided on the course platform. The students choose a question and work on it independently. The results are documented in the form of a project report.

Literature
Compulsory Reading
Further Reading ▪ Bowman, C. et al. (2015). The architecture of privacy. On engineering technologies that can deliver trustworthy safeguards. Sebastopol/CA, O'Reilly. ▪ Calder, A. (2020). Cyber Security Handbook - Prepare for, Respond to and Recover from Cyber Attacks with the IT Governance Cyber Resilience Framework (CRF). IT Governance Publishing. ▪ Calder, A. (2020). Cyber Security - Essential Principles to Secure Your Organisation. IT Governance Publishing. ▪ Hintzbergen, J. et al. (2015). Foundations of information security. 3rd edition, Zaltbommel, Van Haren Publishing. ▪ Nunes, F. J. B., Belchior, A. D. & Albuquerque, A. B. (2010). Security Engineering Approach to Support Software Security. 2010 6th World Congress on Services, Services (SERVICES-1), 2010 6th World Congress On, 48–55. ▪ Paar, C. & Pelzl, J. (2010). Understanding cryptography. A textbook for students and practitioners. Heidelberg, Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

UI/UX Expert

Module Code: DLMAIEUIUX

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ DLMAIEUIUX01 ▪ none	MA	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. Adelka Niels (User Interface and Experience) / Prof. Dr. Adelka Niels (Project: Human Computer Interaction)

Contributing Courses to Module

- User Interface and Experience (DLMAIEUIUX01)
- Project: Human Computer Interaction (DLMAIEUIUX02)

Module Exam Type

Module Exam	Split Exam
	User Interface and Experience • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Project: Human Computer Interaction • Study Format "myStudies": Portfolio • Study Format "Distance Learning": Portfolio

Weight of Module

see curriculum

Module Contents

User Interface and Experience

- ROI of UX design
- Role and mindset of UX design in IT projects
- The UX design process
- UX psychology: How the human mind works
- User research
- UX design basics

Project: Human Computer Interaction

In this course the students will gain practical experience in user experience design. They will conduct user testing for a given user interface and work on developing improvements. The work process and the results will become part of a portfolio.

Learning Outcomes

User Interface and Experience

On successful completion, students will be able to

- Understand what design is about and the crucial aspects of good design
- understand and define the role of the UI/UX designer within a project.
- explain the UX design process and the user-centered mindset.
- advocate the importance of UX design for IT projects.
- describe the basic methods of user research, user testing, and user-centered design.

Project: Human Computer Interaction

On successful completion, students will be able to

- evaluate the usability of a user interface.
- conduct user testing.
- understand the practical implications of putting users first.
- make small changes in existing user interfaces and recognize the situations in which a user experience designer should be consulted.

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 Master Programs in the IT & Technology fields

User Interface and Experience

Course Code: DLMAIEUIUX01

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

Course Description

UX design is crucial to the development of new IT services and applications and enhances the quality of the outcome. Applying UX design techniques can significantly and positively change the software development process, and good UX design is the result of effective teamwork. Within this course the students will understand the mindset, basic techniques, and impact of UX design on IT projects. They will learn how the UX design process works and the role of the UX designer within IT projects. They will also gain skills in the type of collaboration that produces the best results. Using their basic knowledge about good design, the students will know when it is appropriate that they make small changes to UIs themselves and when it is time to consult a designer.

Course Outcomes

On successful completion, students will be able to

- Understand what design is about and the crucial aspects of good design
- understand and define the role of the UI/UX designer within a project.
- explain the UX design process and the user-centered mindset.
- advocate the importance of UX design for IT projects.
- describe the basic methods of user research, user testing, and user-centered design.

Contents

1. ROI of UX design
   - 1.1 Efficacy
   - 1.2 Efficiency
   - 1.3 The impact of design on use errors
2. Role and Mindset of UX design in IT projects
   - 2.1 The role of UX design: the UX designer
   - 2.2 The UX mindset: putting the user first
3. The UX design Process
   - 3.1 In a waterfall process environment
   - 3.2 In an agile process environment
4. UX Psychology: How the Human Mind Works

4.1 Perceptual psychology
4.2 Information processing
4.3 Decision-making
4.4 Situation awareness
4.5 Errors

5. User Research
5.1 The benefit of user research
5.2 Basic research techniques
5.3 User testing

6. UX design Basics
6.1 Interaction design
6.2 Information architecture
6.3 Screen design
6.4 Graphic design
6.5 Rules of good design

Literature

Compulsory Reading

Further Reading

- Cooper, A., Reimann, R., Cronin, D., & Noessel, C. (2014). About face: The essentials of interaction design (5th ed.). Wiley.
- Johnson, J. (2010). Designing with the mind in mind. Elsevier.
- Preece, J., Sharp, H., & Rogers, Y. (2015). Interaction design: Beyond human-computer interaction (5th ed.). Wiley.
- Unger, R., & Chandler, C. (2012). A project guide to UX design: For user experience designers in the field or in the making. New Riders Pub.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

Information about the examination	
Examination Admission Requirements	**Online Tests:** no
Type of Exam	Exam, 90 Minutes

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

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

Project: Human Computer Interaction

Course Code: DLMAIEUIUX02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	DLMAIEUIUX01

Course Description

In this course the students will gain practical experience in user experience design. They will set up and conduct a user testing for a given user interface and develop improvements. The work process and the results will become part of a portfolio.

Course Outcomes

On successful completion, students will be able to

- evaluate the usability of a user interface.
- conduct user testing.
- understand the practical implications of putting users first.
- make small changes in existing user interfaces and recognize the situations in which a user experience designer should be consulted.

Contents

- User experience design focusses on the needs of users. Within this portfolio project the students put into practice basic techniques which lead to good user-centered design. They learn how to test the user experience and usability of an application by conducting user tests, and they also learn how to develop and test ideas for improvement. Students will finish this course having gained practical experience working within the mindset of putting users first.

Literature
Compulsory Reading
Further Reading ▪ Barnum, C. (2010): Usability Testing Essentials: Ready, Set...Test!, Morgan Kaufmann, Burlington, USA ▪ Cooper, A., Reimann, R., Cronin, D., & Noessel, C. (2014). About face: The essentials of interaction design. New York, NY: Wiley. ▪ Johnson, J. (2010). Designing with the mind in mind. Burlington, MA: Elsevier. ▪ Preece, J., Sharp, H., & Rogers, Y. (2015). Interaction design: Beyond human-computer interaction. New York, NY: Wiley. ▪ Microsoft Windows Dev Center. (2018). Guidelines. [Web page]. Retrieved from https://docs.microsoft.com/en-us/windows/desktop/uxguide/guidelines ▪ Unger, R., & Chandler, C. (2012). A project guide to UX design. Berkeley, CA: New Riders.

Study Format myStudies

Study Format	Course Type
myStudies	

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

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

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

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Data Engineer

Module Code: DLMDSEDE

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ DLMDSEDE01 ▪ none	MA	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 (Data Engineering) / Prof. Dr. Max Pumperla (Project: Data Engineering)

Contributing Courses to Module

- Data Engineering (DLMDSEDE01)
- Project: Data Engineering (DLMDSEDE02)

Module Exam Type

Module Exam	Split Exam
	Data Engineering • Study Format "Distance Learning": Oral Assignment • Study Format "myStudies": *Type of examination* Project: Data Engineering • Study Format "Distance Learning": Portfolio • Study Format "myStudies": *Type of examination*

Weight of Module

see curriculum

Module Contents

Data Engineering

- Principles of data engineering
- Paradigms for data processing at scale
- Overview on data governance, security, and protection
- Common cloud platforms
- DataOps approach

Project: Data Engineering

- Knowledge transfer and application to practical problems
- Implementation of a data infrastructure building block

Learning Outcomes

Data Engineering

On successful completion, students will be able to

- understand the foundational concepts in data engineering.
- categorize important data-processing classes.
- summarize common approaches to data governance and security and contribute to the broader societal discussion on an academic level.
- compare different common public cloud offerings.
- recognize current approaches to data operations (DataOps) including productivity tools to facilitate working in interdisciplinary teams.

Project: Data Engineering

On successful completion, students will be able to

- apply the principles of data engineering to a practical application.
- analyze data engineering approaches with respect to a given project task.
- reason about the benefits and drawbacks of solution alternatives for a given implementation task.
- make apposite architectural choices.
- implement aspects of a modern data pipeline abiding by strict data protection principles.

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 Master Programmes in the IT & Technology field.

Data Engineering

Course Code: DLMDSEDE01

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

Course Description

The focus of this first course in the Data Engineering elective module is to introduce students to important principles, concepts, methods and approaches in this subject domain. In order to achieve this goal, the course moves from an exposition of the foundational principles of data engineering to a thorough treatment of the core data processing classes. Modern architectural paradigms such as Microservices are explained, and important factors in data governance and protection are addressed. In this context, students are enabled to reflect on modern data protection principles and their societal implications and implement these principles into large-scale data-intensive systems. Aspects of cloud computing are introduced via an overview of the most common offerings on the market. Finally, a state-of-the-art agile perspective on the operation of data pipelines is given by an exposition to the emerging notion of DataOps and the productivity tools around it to facilitate working in interdisciplinary teams.

Course Outcomes

On successful completion, students will be able to

- understand the foundational concepts in data engineering.
- categorize important data-processing classes.
- summarize common approaches to data governance and security and contribute to the broader societal discussion on an academic level.
- compare different common public cloud offerings.
- recognize current approaches to data operations (DataOps) including productivity tools to facilitate working in interdisciplinary teams.

Contents

1. Foundations of Data Systems
   - 1.1 Reliability
   - 1.2 Scalability
   - 1.3 Maintainability
2. Data Processing at Scale
   - 2.1 Batch Processing
   - 2.2 Stream and Complex Event Processing

3. Microservices
   - 3.1 Introduction to Microservices
   - 3.2 Implementing Microservices

4. Governance & Security
   - 4.1 Data Protection
   - 4.2 Data Security
   - 4.3 Data Governance

5. Common Cloud Platforms & Services
   - 5.1 Amazon AWS
   - 5.2 Google Cloud
   - 5.3 Microsoft Azure

6. Data Ops
   - 6.1 Defining Principles
   - 6.2 Containerization
   - 6.3 Building Data Pipelines

Literature

Compulsory Reading

Further Reading

- Andrade, H., Gedik, B., & Turaga, D. (2014). Fundamentals of stream processing: Application design, systems, and analytics. Cambridge University Press.
- Axelrod, C. W. (2013). Engineering safe and secure software systems. Artech House.
- Kleppmann, M. (2017). Designing data-intensive applications: The big ideas behind reliable, scalable, and maintainable systems. O'Reilly.
- Newman, S. (2015). Building microservices: Designing fine-grained systems. O'Reilly.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Project: Data Engineering

Course Code: DLMDSEDE02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		5	DLMDSEDE01

Course Description

The second course of the Data Engineering elective module builds upon theoretical and methodological insights from the first course. It provides opportunities for students to put their newly-acquired knowledge into practical application by completing a data engineering project.In order to find an appropriate and viable approach, students will have to reason about and evaluate the benefits and drawbacks of possible architectural choices. Once an informed decision has been met, the chosen approach is implemented as a running piece of data infrastructure.

Course Outcomes

On successful completion, students will be able to

- apply the principles of data engineering to a practical application.
- analyze data engineering approaches with respect to a given project task.
- reason about the benefits and drawbacks of solution alternatives for a given implementation task.
- make apposite architectural choices.
- implement aspects of a modern data pipeline abiding by strict data protection principles.

Contents

- The second course of the Data Engineering elective revolves around the implementation of a data engineering project chosen from a set of project suggestions. Students can also contribute their own project ideas.

Literature
Compulsory Reading
Further Reading ▪ Kleppmann, M. (2017). Designing data intensive applications: The big ideas behind reliable, scalable, and maintainable systems. Sebastopol, CA: O'Reilly. ▪ Farcic, V. (2016). The DevOps 2.0 toolkit: Automating the continuous deployment pipeline with containerized microservices. Scotts Valley, CA: CreateSpace Independent Publishing Platform. ▪ White, T. (2015). Hadoop: The definitive guide: Storage and analysis at Internet scale. Sebastopol, CA: O'Reilley. ▪ Karau, H., Konwinski, A., Wendell, P., & Zaharia, M. (2015). Learning Spark: Lightning fast data analysis. Sebastopol, CA: O'Reilley. ▪ Narkhede, N., Shapira, G., & Palino, T. (2017). Kafka: The definitive guide: Real-time data and stream processing at scale. Sebastopol, CA: O'Reilley.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	

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

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

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

Organizational and Human Resources Development

Module Code: DLMWOP_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Maja Störmer (Talent Management & HR Development) / N.N. (Change Management & Organizational Development)

Contributing Courses to Module

- Talent Management & HR Development (DLMTUP01_E)
- Change Management & Organizational Development (DLMCMO01_E)

Module Exam Type

Module Exam	Split Exam
	Talent Management & HR Development • Study Format "Distance Learning": Written Assessment: Case Study • Study Format "myStudies": Written Assessment: Case Study Change Management & Organizational Development • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Talent Management & HR Development

- Fundamentals of Talent Management and Human Resources Development
- Competence and Performance Management
- E-Learning and Blended Learning
- Management Development
- Talent Relationship Management
- Organizational Implementation
- Monitoring the Success of Talent Management and HR Development
- International Talent Management and International Human Resources Development
- An Application Example: ABB

Change Management & Organizational Development

- Basics of Change Management and Organizational Development
- Theoretical Models of Organizational Development
- Theoretical Models of Change Management
- Instruments and Methods
- Organizational Implementation
- Success Control of Change Management and Organizational Development
- Special Features in International Companies

Learning Outcomes

Talent Management & HR Development

On successful completion, students will be able to

- put talent management and HR development in the overall context of human resources management.
- define the ethical framework of talent management and HR development.
- explain the goals, methods and tools of talent management and HR development.
- identify the current challenges and changes of talent management and HR development both within the national as well as international context.
- understand the various ways of talent management and HR development.
- explain the tools that measure talent management and people development success, as well as the difficulties involved.
- describe specific examples as well as best practices of the application of talent management and HR development.

Change Management & Organizational Development

On successful completion, students will be able to

- contextualize areas of Change Management and Organizational Development within the overall context of Human Resources Management.
- explain goals, methods and instruments of Change Management and Organizational Development.
- understand the current characteristics and transformation of Change Management and Organizational Development.
- name alternative instruments of Change Management and Organizational Development and know how to implement Change Management and Organizational Development.
- name the instruments and problems of measuring the success of Change Management and Organizational Development.
- explain the specifics of Change Management and Organizational Development in international companies.

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 Business Administration & Management	All Master Programs in the Human Resources and Business & Management field

Talent Management & HR Development

Course Code: DLMTUP01_E

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

Course Description

Demographic change has forced companies to find, nurture, develop and retain their talent. As a result, the HR manager must continuously revise and organize talent management and development as efficiently as possible. The course is designed to help students understand the importance of talent management and human resource management and to teach them the tools necessary to implement activities related to talent management and human resource development.

Course Outcomes

On successful completion, students will be able to

- put talent management and HR development in the overall context of human resources management.
- define the ethical framework of talent management and HR development.
- explain the goals, methods and tools of talent management and HR development.
- identify the current challenges and changes of talent management and HR development both within the national as well as international context.
- understand the various ways of talent management and HR development.
- explain the tools that measure talent management and people development success, as well as the difficulties involved.
- describe specific examples as well as best practices of the application of talent management and HR development.

Contents

1. Fundamentals of Talent Management and Human Resources Development
   - 1.1 Concepts and Definitions
   - 1.2 Basic Legal Regulations
   - 1.3 The Challenge of Demographic Change
   - 1.4 Ethical Frameworks
2. Competence and Performance Management
   - 2.1 Competence and Skills Management
   - 2.2 Performance and Potential

Literature
Compulsory Reading
Further Reading ▪ Kodden, B. (2020). The art of sustainable performance: A model for recruiting, selection, and professional development. Springer. ▪ Zeuch, M. (Ed.). (2019). Handbook of human resources management. Springer. ▪ Trost, A. (2020). Human resources strategies: Balancing stability and agility in times of digitization. Springer. ▪ Garavan, T., McCarthy, A., & Carbery, R. (2017). Handbook of international human resource development: Context, processes, and people. Edward Elgar.

Study Format Distance Learning

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

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Change Management & Organizational Development

Course Code: DLMCMO01_E

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

Course Description

Considering the current conditions, companies, both large enterprises and SMEs, are constantly confronted with the need to continuously evolve and to adapt and change the organization or structure accordingly. These transformation processes are often perceived as painful, especially by the company's employees: Uncertainties, resistance and fears arise. With the help of concepts and methods for Change Management and Organizational Development, these negative consequences of change processes can be mitigated. The aim of the course is to present this understanding to students and provide them with the necessary "tools" to implement activities related to Change Management and Organizational Development.

Course Outcomes

On successful completion, students will be able to

- contextualize areas of Change Management and Organizational Development within the overall context of Human Resources Management.
- explain goals, methods and instruments of Change Management and Organizational Development.
- understand the current characteristics and transformation of Change Management and Organizational Development.
- name alternative instruments of Change Management and Organizational Development and know how to implement Change Management and Organizational Development.
- name the instruments and problems of measuring the success of Change Management and Organizational Development.
- explain the specifics of Change Management and Organizational Development in international companies.

Contents

1. Basics of Change Management and Organizational Development
   - 1.1 External and Internal Conditions
   - 1.2 Definition and Goals of Change Management and Organizational Development
   - 1.3 Causes for and Barriers of Change in Organizations
2. Theoretical Models of Organizational Development
   - 2.1 Classical Organizational Approaches

Literature

Compulsory Reading

Further Reading

- Al-Haddad, S. & Kotnour, T. (2015). Integrating the Organizational Change Literature: A Model for Successful Change. In: Journal of Organizational Change Management, 28/2, pp. 234–262.
- Burke, W. W. & Litwin, G. H. (1992). A Causal Model of Organizational Performance and Change. In: Journal of Management, 18/3, pp. 523–545.
- Dessler, G. (2015). Human resource managemen. (Fourteenth edition, global edition). Pearson Prentice Hall.
- Hodges, J. (2017). Consultancy, Organizational Development and Change : A Practical Guide to Delivering Value. Kogan Page.
- Hughes, M. (2019). The Leadership of Organizational Change. Routledge, New York.
- Kotter, J. P. (2007). Leading Change: Why Transformation Efforts Fail. Harvard Business Review, 85(1), 96–103.
- The Oxford Handbook of Organizational Change and Innovation.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Digital Health

Module Code: DLMGWDIMP_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	None	MA	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. Elena Phillips (Digital Transformation in Healthcare) / Prof. Dr. Elena Phillips (Seminar: Digital Transformation in Healthcare)

Contributing Courses to Module

- Digital Transformation in Healthcare (DLMGWDIMP01_E)
- Seminar: Digital Transformation in Healthcare (DLMGWDIMP02_E)

Module Exam Type

Module Exam	Split Exam
	Digital Transformation in Healthcare • Study Format "Distance Learning": Exam, 90 Minutes Seminar: Digital Transformation in Healthcare • Study Format "Distance Learning": Written Assessment: Research Essay

Weight of Module

see curriculum

Module Contents

Digital Transformation in Healthcare

- Terms, concepts and examples of digitalization in the health and social care sector
- Design approaches for digitalization projects
- Ethical consideration of digitalization processes
- Challenges and risks of digital transformations

Seminar: Digital Transformation in Healthcare

This course will take a critical look at current topics and trends related to the digitalization of processes in medicine and nursing.

Learning Outcomes

Digital Transformation in Healthcare

On successful completion, students will be able to

- explain the basic terms and concepts of digitalization.
- understand the principles and modes of action of digital transformations.
- describe current technologies and digitalization processes in medicine and nursing.
- develop their own ideas and design approaches for digitalization projects.
- determine the ethical problems of digital transformations.
- assess the challenges and risks of digitalization processes.

Seminar: Digital Transformation in Healthcare

On successful completion, students will be able to

- evaluate a digitization issue from different points of view or perspectives.
- implement a systematic literature search according to scientific principles.
- write a scientific paper according to formal and methodological criteria.
- identify various, current issues of digital transformation in medicine and nursing.
- contrast the different effects and changes caused by digitization processes in medicine and nursing.

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 Healthcare Management	All Master Programs in the field of Health Affairs

Digital Transformation in Healthcare

Course Code: DLMGWDIMP01_E

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

Course Description

In the current context of demographic change, rising healthcare costs, and the limited availability of healthcare resources, digital transformation in healthcare presents new opportunities and challenges. This course provides an overview of crucial digital technologies and their application in the healthcare sector, simultaneously considering leading legal and societal initiatives shaping the transformation of healthcare systems. The introduction provides the theoretical foundations and the overview of terms and concepts of digital transformation, shedding light on current difficulties in healthcare systems that are driving digital innovation. This is followed by an examination of the "digital health" phenomenon and its disruptive impact on patients, physicians, and their relationships. Digital transformation is linked with certain technologies such as artificial intelligence (AI), blockchain, and quantum technologies (QT). To assess the value and implications of these technologies for healthcare, this course provides an essential understanding of their key concepts and mechanisms of work. Digital technologies have a transformative effect on healthcare, with both positive and negative implications. Thus, a set of ethics applicable to digital health is urgently needed to shape the digital transformation process, minimizing its risks and enhancing its benefits. This course provides theoretical ethical foundations and introduces a practical ethical framework for evaluating digital health interventions. Finally, the course examines the main risks and challenges related to digital transformation in healthcare, such as unreliable AI, threats to data security, and data privacy, providing an overview of legal and societal strategies to govern digital technologies.

Course Outcomes

On successful completion, students will be able to

- explain the basic terms and concepts of digitalization.
- understand the principles and modes of action of digital transformations.
- describe current technologies and digitalization processes in medicine and nursing.
- develop their own ideas and design approaches for digitalization projects.
- determine the ethical problems of digital transformations.
- assess the challenges and risks of digitalization processes.

Contents

1. Foundations of Digital Transformation in Healthcare
   - 1.1 Current Challenges of Healthcare Systems
   - 1.2 Digitization, Digitalization, and Digital Transformation

1.3 Potential of Digital Technologies in Healthcare

2. Digital Health
   - 2.1 A Brief History of Digital Health
   - 2.2 Digital Health as a Paradigm Shift in Traditional Healthcare
   - 2.3 Empowerment Through Digital Health: Patients
   - 2.4 Empowerment Through Digital Health: Physicians
   - 2.5 The Patient–Physician Relationship in the Digital Health Era: It's Complicated

3. Technologies in Digital Health
   - 3.1 Artificial Intelligence
   - 3.2 Blockchain
   - 3.3 Quantum Technologies

4. Ethics in Digital Health
   - 4.1 Ethics: Terms and Concepts
   - 4.2 Theoretical Approaches to Normative Ethics
   - 4.3 Methods for the Ethical Evaluation of Digital Health
   - 4.4 Ethics and Soft Law: European Ethics Guidelines for Trustworthy Artificial Intelligence

5. Risks and Challenges of Digital Health
   - 5.1 Risks of Digital Health
   - 5.2 Are Soft Laws Enough?
   - 5.3 From Ethics to Legislation

Literature

Compulsory Reading

Further Reading

- Menvielle, L./Audrain-Pontevia, A.-F./Menvielle, W. (eds., 2017): The Digitization of Healthcare. Palgrave Macmillan, London.
- Saari, E./Toivonen, M. (2019): Human-Centered Digitalization and Services. Springer, Singapore.
- Shashi Gogia, S. (2019): Fundamentals of Telemedicine and Telehealth. Elsevier Science, Amsterdam.

Study Format Distance Learning

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

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

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

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

Seminar: Digital Transformation in Healthcare

Course Code: DLMGWDIMP02_E

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

Course Description

This course focuses on digital transformations and trends in medicine and nursing. Technological advances in information and communication technology as well as robotics are leading to the transformation of established structures and processes in health and social care in a very short time. This also means that the familiar roles and areas of responsibility of all involved steakholders (e.g. doctors, nursing and care staff, patients, citizens, etc.) are changing. In health and care management, the ability to critically examine innovations or new technologies in order to be able to assess their actual social, cultural and economic added value is needed. For this reason, each student prepares a written research essay in which the critical examination of digital transformation processes takes place, whereby advantages and disadvantages as well as opportunities and limitations of digital technologies and processes are recognized. In addition, this also opens up perspectives for the active design and management of digitization processes in hospitals, nursing homes and other health and social care facilities

Course Outcomes

On successful completion, students will be able to

- evaluate a digitization issue from different points of view or perspectives.
- implement a systematic literature search according to scientific principles.
- write a scientific paper according to formal and methodological criteria.
- identify various, current issues of digital transformation in medicine and nursing.
- contrast the different effects and changes caused by digitization processes in medicine and nursing.

Contents

- The digital transformation in health and social care is progressing continuously: innovative care processes are arriving in practice, new technologies and markets are arising, but new risks and problems are also emerging. This seminar addresses such current topics of digitalization in medicine and care. The seminar topics include various technologies and innovations of digitalization in health and social care (mHealth, internet of things, AI, etc.), which will be analyzed from different perspectives e.g. from an ethical, legal, social, cultural and economic point of view. Each student has to prepare a research essay on an assigned topic.

Literature
Compulsory Reading
Further Reading ▪ Menvielle, L./Audrain-Pontevia, A.-F./Menvielle, W. (eds., 2017): The Digitization of Healthcare. Palgrave Macmillan, London. ▪ Saari, E./Toivonen, M. (2019): Human-Centered Digitalization and Services. Springer, Singapore. ▪ Shashi Gogia, S. (2019): Fundamentals of Telemedicine and Telehealth. Elsevier Science, Amsterdam.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

Digital Insurance

Module Code: DLMWDI_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Johann Smalla (Big Data in Insurance) / Prof. Dr. Johann Smalla (Digital Innovation in Insurance)

Contributing Courses to Module

- Big Data in Insurance (DLMWDI01_E)
- Digital Innovation in Insurance (DLMWDI02_E)

Module Exam Type

Module Exam	Split Exam
	Big Data in Insurance • Study Format "Distance Learning": Exam, 90 Minutes Digital Innovation in Insurance • Study Format "Distance Learning": Written Assessment: Case Study

Weight of Module

see curriculum

Module Contents

Big Data in Insurance

- Background and History of Big Data and its Applications in the Insurance Industry
- Enabler of Digital Transformation in the Insurance Industry
- Application of Data Mining and Big Data Management in the Insurance Industry
- Data Analysis Methods
- Data Visualization Techniques
- Case Study: Big Data Management in the Insurance Industry

Digital Innovation in Insurance

- Digitalization, Innovation and Transformation in the Insurance Industry
- Opportunity Recognition: Identifying New Opportunities in the Marketplace
- Model Formations for Digital Insurance
- Innovation Management in the Insurance Industry
- Current Developments: Conceptual Innovations
- Case Study "Digital Innovation Management in the Insurance Industry”

Learning Outcomes

Big Data in Insurance

On successful completion, students will be able to

- explain the terms around data mining and big data.
- scope data mining and big data from other enablers of digitization.
- outline the various applications of data mining and big data in the insurance industry and evaluate their benefits in a differentiated manner, considering the five Vs (Volume, Variety, Velocity, Validity, Value) that are elementary for big data.
- name and apply the tools of data analysis and evaluation. This explicitly refers to data mining and analyzing large amounts of insurance industry data based on statistical and interdisciplinary methods.
- explain the data protection and moral implications of Big Data in the insurance industry and take them into account in their practical actions.

Digital Innovation in Insurance

On successful completion, students will be able to

- explain the terms around digitalization, innovation and transformation in the insurance industry.
- develop Digital Insurance Innovation as a model and explain it based on various characteristics.
- explain and apply innovation management and its tools.
- operate opportunity recognition in the market, considering the ever-changing game rules.
- outline current trends of Digital Innovation Management, such as conceptual innovations, and exemplarily applying them to the insurance industry.
- independently delve into a topic in the field of digital insurance innovation and present their findings in writing as part of a 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 Methods and Finance & Tax Accounting	All Master Programs in the Business & Management field

Big Data in Insurance

Course Code: DLMWDI01_E

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

Course Description

In this course, students are familiarized with the framework, background and history of Big Data and its increasing relevance for the financial services industry. Based on the success factors (so-called five Vs), there is, among other things, a comprehensive elaboration of IT- and data-specific as well as data-specific legal requirements. This enables the course participants to deal with process- and product-related applications of data mining and big data management in the insurance industry and to reflect on them critically. Methods of data analysis such as supervised and unsupervised learning, deep learning as well as various techniques of data visualization enable the students to work with Big Data in the insurance industry. Using an exemplary case study, students will be able to transfer what they have learned to new situations within the VU.

Course Outcomes

On successful completion, students will be able to

- explain the terms around data mining and big data.
- scope data mining and big data from other enablers of digitization.
- outline the various applications of data mining and big data in the insurance industry and evaluate their benefits in a differentiated manner, considering the five Vs (Volume, Variety, Velocity, Validity, Value) that are elementary for big data.
- name and apply the tools of data analysis and evaluation. This explicitly refers to data mining and analyzing large amounts of insurance industry data based on statistical and interdisciplinary methods.
- explain the data protection and moral implications of Big Data in the insurance industry and take them into account in their practical actions.

Contents

1. Background and History of Big Data and Its Applications in the Insurance Industry
   - 1.1 Definitions and Scoping
   - 1.2 Characterization of Big Data based on the Five and Further “Vs”
   - 1.3 Data Privacy, Data Security and Data Integrity
2. Enabler of Digital Transformation in the Insurance Industry
   - 2.1 Digital Transformation
   - 2.2 Enabler

3. Application of Data Mining and Big Data Management in the Insurance Industry
   - 3.1 IT Architectures and Data Management
   - 3.2 Challenges and Opportunities
   - 3.3 Process Related Applications
   - 3.4 Product Related Applications

4. Data Analysis Methods
   - 4.1 Supervised and Unsupervised Learning
   - 4.2 Deep Learning
   - 4.3 Decision Trees
   - 4.4 Neural Networks
   - 4.5 Closure in Bayesian Networks
   - 4.6 Regression Analysis
   - 4.7 High Performance and Cloud Computing
   - 4.8 Predictive Modeling and Model Aggregation Methods

5. Data Visualization Techniques
   - 5.1 Principles of Data Visualization
   - 5.2 Visualization Approaches
   - 5.3 Visualization Tools

6. Case Study: Big Data Management in the Insurance Industry
   - 6.1 Adoption Process

Literature

Compulsory Reading

Further Reading

- Ali, J. & Caalsc, K. (2020). Ensuring trustworthy use of artificial intelligence and big data analytics in health insurance. Bulletin of the World Health Organization. 2020;98(4):263-269.
- Boobier, T. (2016). Analytics for insurance: Rhe real business of big data. Chichester: John Whiley.
- Mullins, M, Holland C.P. & Cunneen M. (2021). Creating ethics guidelines for artificial intelligence and big data analytics customers: The case of the consumer European insurance market. Patterns. 2021;2(10).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Digital Innovation in Insurance

Course Code: DLMWDI02_E

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

Course Description

The course will teach students the requirements of identifying opportunities that arise in the marketplace and how to develop and successfully implement appropriate digital innovations in the financial services industry. The prerequisite for this is a detailed understanding of the importance of digital innovations for the future viability of the VU. In addition, the competencies of model building for digital business models (including in the form of customer requirements and customer journey) are taught. Ways in which innovative business models can be operationalized for the insurance industry will be demonstrated. In addition, trends in the digital development of the industry will be discussed. A case study on digital innovation management in the insurance industry enables students to apply their acquired knowledge in an exemplary manner.

Course Outcomes

On successful completion, students will be able to

- explain the terms around digitalization, innovation and transformation in the insurance industry.
- develop Digital Insurance Innovation as a model and explain it based on various characteristics.
- explain and apply innovation management and its tools.
- operate opportunity recognition in the market, considering the ever-changing game rules.
- outline current trends of Digital Innovation Management, such as conceptual innovations, and exemplarily applying them to the insurance industry.
- independently delve into a topic in the field of digital insurance innovation and present their findings in writing as part of a case study.

Contents

1. Digitalization, Innovation and Transformation in the Insurance Industry
   - 1.1 Definition and Delimitation
   - 1.2 Characterization of Digital Insurance
   - 1.3 Innovations in the Digital Evolution
   - 1.4 Challenges and Opportunities of Digital Innovations
2. Opportunity Recognition: Identifying New Opportunities in the Marketplace

2.1 Processes of Change and Recognition of Opportunities
2.2 Current Situation and Recent Developments in the Insurance Industry
2.3 Distribution Channels
2.4 Regulation and Data Protection

3. Model Formations for Digital Insurance
3.1 Voice of the Customer
3.2 Customer Journey Analysis
3.3 Corporate Digital Insurance
3.4 Customer Equity and Customer Value of Digital Insurance
3.5 Critical Success Factors

4. Innovation Management in the Insurance Industry
4.1 Innovation Models
4.2 Future Challenges for Innovations in the Insurance Industry

5. Current Developments: Conceptual Innovations
5.1 The Blue Ocean Shift
5.2 Network Imperative (Prosumer and Network Orchestration)
5.3 Recruiting and Personnel Development in the Digital World

6. Case Study "Digital Innovation Management in the Insurance Industry”
6.1 The RPA Project
6.2 The Decision Template

Literature

Compulsory Reading

Further Reading

- Kirov, S. (2021). Pandemic Digitalization of the Insurance Business. Izesstia, Journal of the Union of Scientists - Varna, Economic Sciences Series. 2021;10(1):72-79.
- Rabkin, B. (2022). Becoming Truly Digital. Insurance Journal. 2022;100(12):42-44.
- Yaneva, T. (2021). Digital Transformation of Insurance Sector. Izesstia, Journal of the Union of Scientists - Varna, Economic Sciences Series, 10(1), 97–104.

Study Format Distance Learning

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

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

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

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

Applied Online Project Management

Module Code: DLMBUITAOPM

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Margit Sarstedt (Applied Project Management) / Prof. Dr. Margit Sarstedt (Online Project Simulation)

Contributing Courses to Module

- Applied Project Management (DLMPRAPM01_E)
- Online Project Simulation (DLMPRWOPS02_E)

Module Exam Type

Module Exam	Split Exam
	Applied Project Management • Study Format "Distance Learning": Oral Assignment Online Project Simulation • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Applied Project Management

- The Project Management Landscape
- The Project Context
- Standardized Approaches to Project Management
- Agile Approaches to Project/Process Management
- Variations of Standardized and Agile Methods
- Tools for Project Managers

Online Project Simulation

In this course the theoretical knowledge is practically applied, discussed and evaluated in an online simulated project with real background.

Learning Outcomes

Applied Project Management

On successful completion, students will be able to

- understand and explain the role of project management within organizations.
- give an overview over the project management institutions worldwide.
- explain the different approaches of the most important standardized and agile project management methods.
- critically discuss the advantages and restrictions of each of these methods.
- know and apply the variety of helpful tools supporting a project manager's work.
- select the appropriate project management method for any given situation.

Online Project Simulation

On successful completion, students will be able to

- prepare a project report taking into account the requirements of a scientific paper.
- understand the planning of strategies for projects at different levels and to evaluate it considering the project conception in practice.
- apply and implement the acquired knowledge in the field of project management in their own company by means of a concrete project.
- develop their skills to engage in discourses as part of the online simulation and to improve their social skills and creative competence.
- analyze practical situations and challenges, to develop and reflect on project-based solutions, and to implement them in a goal-oriented manner.
- practice and apply online communications methods.
- derive their own tools to lead a project to success in a structured manner within the company.
- identify and implement timelines for the execution of the project.
- recognize hurdles within a project and independently develop solutions.

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

Applied Project Management

Course Code: DLMPRAPM01_E

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

Course Description

For many decades now, the approach of project management has played an important role worldwide, both in the private sector as well as in public administration. Over the years, a widespread and commonly used terminology has evolved. National and international project management organizations have developed various methods for managing complex projects in an organized way. These can be divided into two major categories. The traditional standardized methods all have in common that they tackle projects in a planned and well-structured way. The agile methods, on the other hand, feature a systematic but open approach, leaving vast room for changes along the way. In this course, the individual methods are being introduced to some level of detail, explaining the basic idea, and showing the advantages and restrictions of each of these methods. The typical field of application for each method will be described, enabling the student to choose the method fitting best for a given situation. Additionally, a set of practical tools will be taught, which will support a project manager in steering any given project towards the project goal.

Course Outcomes

On successful completion, students will be able to

- understand and explain the role of project management within organizations.
- give an overview over the project management institutions worldwide.
- explain the different approaches of the most important standardized and agile project management methods.
- critically discuss the advantages and restrictions of each of these methods.
- know and apply the variety of helpful tools supporting a project manager's work.
- select the appropriate project management method for any given situation.

Contents

1. The Project Management Landscape
   - 1.1 History of project management
   - 1.2 Definition of projects, programs, and processes
   - 1.3 Scope and examples of projects in today's world
   - 1.4 International project management organizations
   - 1.5 Options for specialization and certification

2. The Project Context
   - 2.1 Analyzing the environment and the project goals
   - 2.2 Distinguishing project types and categories
   - 2.3 Project culture and organization models
   - 2.4 The role of leadership and personnel management
   - 2.5 Finding the right approach – selection criteria

3. Standardized Approaches to Project Management
   - 3.1 Project management according to German DIN
   - 3.2 Project management according to PMBOK 6 by the PMI
   - 3.3 The IPMA system
   - 3.4 Organizing projects with PRINCE2®
   - 3.5 Advantages and restrictions of standardized methods

4. Agile Approaches to Project/Process Management
   - 4.1 The Agile Manifesto
   - 4.2 Fundamentals of Scrum and scaling methods
   - 4.3 Kanban and Design Thinking
   - 4.4 Advantages and restrictions of agile methods

5. Variations of Standardized and Agile Methods
   - 5.1 The critical chain project management
   - 5.2 Prince2® Agile
   - 5.3 The PMBOK 7 by the PMI
   - 5.4 Overview over further variations

6. Tools for Project Managers
   - 6.1 Objectives, milestone planning, and work packages
   - 6.2 Budgeting, resource planning, and scheduling using bar charts
   - 6.3 Analyzing project risks (FMEA) and milestone trends (MTA)
   - 6.4 Taskboards and other little tricks
   - 6.5 Stakeholder management and management reporting

Literature
Compulsory Reading
Further Reading ▪ AXELOS Limited (2017): Managing Successful Projects with PRINCE2®. 2017 edition, TSO, Norwich, UK. ▪ Beck, K. et al. (2001): Manifesto for Agile Software Development. https://agilemanifesto.org/, last accessed on July 07, 2021. ▪ IPMA® International Project Management Association (2018): Individual Competence Baseline for Project Management. Version 4.0, IPMA, Amsterdam, NL. ▪ Project Management Institute (2017): A Guide to the Project Management Body of Knowledge (PMBOK® Guide). 6th edition, Newtown Square, PA, USA.

Study Format Distance Learning

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

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

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

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

Online Project Simulation

Course Code: DLMPRWOPS02_E

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

Course Description

The course deals with the expansion of the basic knowledge of project management methods and their application. This takes place within the framework of an online simulation. In doing so, know-how regarding the processes within a project is built up and individual methods are practically applied in the online simulated project.

Course Outcomes

On successful completion, students will be able to

- prepare a project report taking into account the requirements of a scientific paper.
- understand the planning of strategies for projects at different levels and to evaluate it considering the project conception in practice.
- apply and implement the acquired knowledge in the field of project management in their own company by means of a concrete project.
- develop their skills to engage in discourses as part of the online simulation and to improve their social skills and creative competence.
- analyze practical situations and challenges, to develop and reflect on project-based solutions, and to implement them in a goal-oriented manner.
- practice and apply online communications methods.
- derive their own tools to lead a project to success in a structured manner within the company.
- identify and implement timelines for the execution of the project.
- recognize hurdles within a project and independently develop solutions.

Contents

- The course expands on the combination of knowledge and skills from project management and strategic management. The knowledge of general methods and procedures for developing and implementing corporate strategies is now used and applied in conjunction with a concrete project taking place in the online simulation. The results will be evaluated in two different ways: Firstly, in the form of immediate feedback after completion of the online simulation, supplying the student with a description of the implemented actions and their classification in the simulated project events. This shows the self-selected measures for fulfilling the project-based specifications and for solving the problem considering the requirements. The student is thus able to reflect on his/her own decisions. Secondly, in the form of a written assignment. Here, students combine their learned and experienced

specialized knowledge in these areas with their work in the online project. The way of implementing the specialized knowledge in practice has to be described and discussed in written form. This written assignment is about applying and critically reflecting on the general approaches and procedures on the basis of given standards in an online project. The report must meet scientific criteria, which includes in particular, in addition to the formal requirements, a literature research and the scientific-methodical foundation of the online project simulation. The necessary entrepreneurial questions are to be recognized, analyzed and processed on the basis of scientific methods. This allows students to reflect on the application of acquired knowledge when working on the online simulated project and to critically discuss the relationships between scientific knowledge, complex action situations and their own person.

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.
- Rubin, K. S. (2012). Essential Scrum: A Practical Guide to the Most Popular Agile Process. Addison-Wesley Signature Series (Cohn).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

E-Commerce

Module Code: MWEC-01_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Jonas Polfuß (E-Commerce I) / Prof. Dr. Jonas Polfuß (E-Commerce II)

Contributing Courses to Module

- E-Commerce I (MWEC01-01_E)
- E-Commerce II (MWEC02-01_E)

Module Exam Type

Module Exam	Split Exam
	E-Commerce I • Study Format "Distance Learning": Exam, 90 Minutes E-Commerce II • Study Format "Distance Learning": Written Assessment: Case Study

Weight of Module

see curriculum

Module Contents

E-Commerce I

- Basics of e-business and e-commerce
- Forms of e-commerce
- Strategic options in e-commerce
- Development of e-commerce strategies
- Measurement of success and success factors in e-commerce
- Risk benefit in e-commerce
- E-commerce in selected sectors

E-Commerce II

- Basics of online marketing and e-commerce
- web usability
- Network-based payment systems
- Legal basis
- Shop systems - tools - logistics
- Social media marketing in e-commerce
- Monitoring and analysis

Learning Outcomes

E-Commerce I

On successful completion, students will be able to

- explain the basics and theory of e-commerce.
- know analysis methods for the economic management of e-commerce.
- classify the terms e-commerce and e-business.
- explain alternative strategies and instruments of e-commerce, implement them and check their influence on success.
- work with chances and possibilities of the internet in connection with e-commerce.
- know current business models and use this knowledge to find additional distribution channels.
- analyze e-commerce from a management perspective and prepare well-founded decision documents.
- know the sectoral characteristics of e-commerce, especially how e-commerce is structured in the B2B and capital goods sector and what has to be considered in the consumer goods industry (B2C).

E-Commerce II

On successful completion, students will be able to

- assess the potential of an online shop to successfully sell products and services over the Internet.
- know the conceptual, technical and legal aspects of e-commerce
- describe important prerequisites for success in e-commerce such as product range presentation, checkout and payment processes, conversion rate, etc.
- know selection criteria for shop systems and know the most important ones (Hybris, Magento etc.)
- explain current and future challenges, so that they can implement e-shop and e-commerce projects themselves.

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 Master Programs in the Marketing & Communication fields

E-Commerce I

Course Code: MWEC01-01_E

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

Course Description

This course addresses the topic of e-commerce. In addition to basic technical terms, concepts, business models and players, the opportunities and risks of electronic commerce within market-related and legal frameworks are also introduced. Based on this, the possible strategic options in e-commerce are presented in detail, on the basis of which students can derive their own e-commerce strategy.

Course Outcomes

On successful completion, students will be able to

- explain the basics and theory of e-commerce.
- know analysis methods for the economic management of e-commerce.
- classify the terms e-commerce and e-business.
- explain alternative strategies and instruments of e-commerce, implement them and check their influence on success.
- work with chances and possibilities of the internet in connection with e-commerce.
- know current business models and use this knowledge to find additional distribution channels.
- analyze e-commerce from a management perspective and prepare well-founded decision documents.
- know the sectoral characteristics of e-commerce, especially how e-commerce is structured in the B2B and capital goods sector and what has to be considered in the consumer goods industry (B2C).

Contents

1. Basics of E-Business and E-Commerce 1.1 Definition of Terms, Limitations and Links to Other Units 1.2 Mobile Commerce
   - 1.1 Trends and Opportunities
   - 1.2 Economic Framework Conditions in E-Commerce
   - 1.3 Value Creation and Business Models
   - 1.4 Actors/Market Participants and Business Relations
2. Forms of E-Commerce
   - 2.1 Types of E-Commerce Operations

2.2 Innovative Forms of Interactive E-Commerce

3. Strategic Options in E-Commerce
   - 3.1 Product Range Policy
   - 3.2 Pricing Policy
   - 3.3 Distribution Policy
   - 3.4 Communication Policy
   - 3.5 IT System Landscape and Internal Organization of E-Commerce
   - 3.6 Customer Loyalty, Trust and Reputation

4. Development of an E-Commerce Strategy
   - 4.1 Conceptual Framework
   - 4.2 Target Planning
   - 4.3 E-Business Analysis
   - 4.4 E-Business Strategy Formulation
   - 4.5 E-Business Strategy Implementation and Strategy Audit

5. Success Measurement and Success Factors in E-Commerce
   - 5.1 Success Measurements in E-Commerce
   - 5.2 Success Factors in E-Commerce

6. Opportunities and Risks in E-Commerce
   - 6.1 Legal Risks in E-Commerce (B2C)
   - 6.2 Opportunities and Risks for Pure Players
   - 6.3 Opportunities and Risks for Multi-Channel Players

7. E-Commerce in Selected Sectors
   - 7.1 E-Commerce in the Consumer Goods Sector (B2C) - E-Shop
   - 7.2 E-Commerce in the Capital Goods Sector (B2C) - E-Procurement

Literature

Compulsory Reading

Further Reading

- Turban, E., Whiteside, J., King, D., & Outland, J. (2017). Introduction to electronic commerce and social commerce. Springer.
- Laudon, K., & Traver, C. (2021). E-commerce 2021: Business, technology, and society (16th ed.). Pearson.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

E-Commerce II

Course Code: MWEC02-01_E

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

Course Description

This course expands and deepens the understanding of electronic commerce with elements of operational marketing, especially brand communication and interactive product/service and pricing, complemented by in-depth aspects of the growing importance of payment systems and mobile commerce systems.Based on the understanding of online customer behavior, participants discuss online advertising, pricing and communication, as well as PR activities, for example in the area of social networks. Another focus is on the technical requirements for successful e-commerce, such as usability, selection of shop and payment systems. The course program is supplemented by legal framework conditions and possibilities for customer integration.After completing this course, students will have a deeper understanding of marketing implications of e-commerce.

Course Outcomes

On successful completion, students will be able to

- assess the potential of an online shop to successfully sell products and services over the Internet.
- know the conceptual, technical and legal aspects of e-commerce
- describe important prerequisites for success in e-commerce such as product range presentation, checkout and payment processes, conversion rate, etc.
- know selection criteria for shop systems and know the most important ones (Hybris, Magento etc.)
- explain current and future challenges, so that they can implement e-shop and e-commerce projects themselves.

Contents

1. Basics of Online Marketing and E-Commerce
   - 1.1 Behavior of Online Customers
   - 1.2 Forms of Online Marketing
   - 1.3 Importance, Function and Impact of Online Marketing in E-Commerce
   - 1.4 Online Sales Channels, Mobile Marketing and Apps
   - 1.5 Implementation: Decision Criteria, Specifications and Project Management
2. Web Usability

- 2.1 Criteria of Good Web Usability
- 2.2 Barrier-Free Design and Responsive Design
- 2.3 Search Engine Optimization and Content Marketing

3. Network-Based Payment Systems
   - 3.1 Criteria for Web-Based Payment Systems
   - 3.2 Prepaid Systems, Pay-Now Systems and Pay-Later Systems
   - 3.3 Mobile Payment and Scoring

4. Legal Basis
   - 4.1 Legal Aspects of Ordering and Delivery Processes
   - 4.2 General Terms and Conditions, Commercial Law and Right of Withdrawal
   - 4.3 Image Rights, Trademark Protection and Data Privacy
   - 4.4 Liability of the Shop and Website Operator

5. Shop Systems - Tools - Logistics
   - 5.1 Success Factors and Selection Criteria of a Good Online Shop
   - 5.2 Seal of Approval/Certification
   - 5.3 Range of Goods and Ordering Process
   - 5.4 Processing and Logistics
   - 5.5 Collection and Receivables Management

6. Social Media Marketing in E-Commerce
   - 6.1 Cross-Media Marketing of Online Shops
   - 6.2 Customer Retention and Achievement of Reach
   - 6.3 Conflict Management in Social Networks
   - 6.4 Social Media Advertising and Advertising Networks

7. Monitoring and Analysis
   - 7.1 Measuring Success: Goals, Methods and Funds
   - 7.2 Targeting and KPI Definitions
   - 7.3 Web Controlling
   - 7.4 Visitor Analysis

Literature
Compulsory Reading
Further Reading ▪ Wiedenhoefer, L. (2021). Digital customer experience engineering: Strategies for creating effectivedigital experiences. Apress. ▪ Lesvitt, M. O., & Shneiderman, B. (2007). Research-based web design & usability guidelines.United States Government Printing Office.

Study Format Distance Learning

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

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

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

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

Process Management and Operational Application Systems

Module Code: DLMWIWPBA_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Sebastian Lempert (Process Management) / Dr. Sebastian Lempert (Operational Application Systems)

Contributing Courses to Module

- Process Management (DLMWIWPBA01_E)
- Operational Application Systems (DLMWIWPBA02_E)

Module Exam Type

Module Exam	Split Exam
	Process Management • Study Format "Distance Learning": Exam, 90 Minutes Operational Application Systems • Study Format "Distance Learning": Written Assessment: Case Study

Weight of Module

see curriculum

Module Contents

Process Management

- Terms and Motivation for Process Management
- Strategic Process Management
- Modeling of Business Processes
- Process Controlling
- Process Roll-Out
- Process Optimization

Operational Application Systems

- Categories of Operational Application Systems
- Business Process Management Systems
- Enterprise Resource Planning
- Supply Chain Management
- Customer Relationship Management
- Management Information Systems

Learning Outcomes

Process Management

On successful completion, students will be able to

- describe motivation of process management, delineate typical processes of design phases, and identify risks of process change.
- document business processes in a structured manner.
- describe the motivation and use of reference processes and name at least one typical reference process.
- describe and exemplify required activities in the reengineering of processes.
- describe phases of a process roll-out, analyze effects of process changes and identify risks.

Operational Application Systems

On successful completion, students will be able to

- describe and differentiate categories of business application systems.
- describe and differentiate typical tasks and functions of systems for business process management, workflow management and document management.
- describe the motivation and objectives of ERP systems and evaluate how they
- support the planning and control of operational and strategic resources.
- state and delineate objectives, functions, and an example scenario for supply chain management systems.
- describe objectives, functions, and an example scenario for customer relationship management systems.
- describe and differentiate the use and information structure of analytical information systems and their applications for management information.
- analyze and evaluate for given scenarios which business functions can be usefully deployed by which types of operational application systems and to describe the knowledge gained.

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 Master Programs in the IT & Technology field

Process Management

Course Code: DLMWIWPBA01_E

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

Course Description

Well-defined business processes are a central basis for the control and management of medium-sized and large organizations. They contain binding rules and agreements documenting the interaction of all organizational units and persons involved. In this course, practical documentation methods for process modeling and the use of reference processes are presented. In addition a discussion of phases and activities for reengineering processes is given which can then be used to redesign existing corporate processes. Subsequently, the course informs about organizational change and how it can be carried out with a process roll-out and what has to be considered in the process. Finally, the motivation, elements and results of strategic process management are presented and their relationships with corporate organization are explained.

Course Outcomes

On successful completion, students will be able to

- describe motivation of process management, delineate typical processes of design phases, and identify risks of process change.
- document business processes in a structured manner.
- describe the motivation and use of reference processes and name at least one typical reference process.
- describe and exemplify required activities in the reengineering of processes.
- describe phases of a process roll-out, analyze effects of process changes and identify risks.

Contents

1. Terms and Motivation for Process Management
   - 1.1 Terms: Process, Process Management
   - 1.2 Motivation for Process Management
   - 1.3 Risks and Challenges of Changing Processes in Organizations
   - 1.4 Phases of Process Design
   - 1.5 From Process to Workflow

2. Strategic Process Management
   - 2.1 Organizational Forms and Their Development
   - 2.2 Derivation of Enterprise Process Models
   - 2.3 Design and Structuring of Enterprise Process Models

2.4 Process Landscape and Process Maps
2.5 Reference Processes (ITIL, CMM as an Example)

3. Modeling of Business Processes
3.1 Actual and Target Modeling
3.2 Business Process and Notation (BPMN)
3.3 Extended Event Driven Process Chains (eEPC)

4. Process Controlling
4.1 The PDCA Approach and CIP
4.2 Process Controlling, KPIs, Metrics, Dimensions
4.3 Process Mining

5. Process Roll-Out
5.1 Phases of a Process Roll-Out
5.2 5.2 Simulation of Processes

6. Process Optimization
6.1 State-Analysis and Process Evaluation
6.2 Process Optimization
6.3 Analysis of the Effects of Process Changes
6.4 Change Management

Literature

Compulsory Reading

Further Reading

- Allweyer, T. (2016): BPMN 2.0: Introduction to the Standard for Business Process. Books on Demand.
- Becker, J./Kugeler, M./Rosemann, M. (2011): Process Management. A Guide for the Design of Business Processes. 2nd Edition. Springer, Berlin/Heidelberg.
- Damij, N., Damij, T. (2014): Process Management. A Multi-disciplinary Guide to Theory, Modeling, and Methodology. Springer, Berlin/Heidelberg.
- Davis, R. (2008): ARIS Design Platform: Getting Started with BPM. Springer, London.
- Freund, J./Rücker, B. (2019): Real-Life BPMN. Includes an introduction to DMN. 4th Edition. Independently published.
- Hanschke, I. (2010): Strategic IT Management: A Toolkit for Enterprise Architecture Management. Springer, Berlin/Heidelberg.
- Process Maps (2019): IT Process Wiki - the ITIL®-Wiki. This Wiki is about the IT Infrastructure Library ITIL® (ITIL 4, ITIL V3 & V2) and IT Service Management (ITSM). (URL: https://wiki.en.it-processmaps.com/index.php/Main_Page [last access: 2021-02-16]).

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

Instructional Methods

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

Operational Application Systems

Course Code: DLMWIWPBA02_E

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

Course Description

Almost every company uses operational application systems to perform or support business processes. In addition, many management decisions are made on the basis of data which is provided and evaluated by business application systems. This course first describes the categories of operational application systems and the business units in which they are used. Then, typical tasks and functions of systems for business process management, workflow management and document management are described.In addition, tasks, functions and example scenarios for enterprise resource planning, supply chain management and customer relationship management systems are presented. Finally, analytical information systems and their applications as management information systems are described.

Course Outcomes

On successful completion, students will be able to

- describe and differentiate categories of business application systems.
- describe and differentiate typical tasks and functions of systems for business process management, workflow management and document management.
- describe the motivation and objectives of ERP systems and evaluate how they
- support the planning and control of operational and strategic resources.
- state and delineate objectives, functions, and an example scenario for supply chain management systems.
- describe objectives, functions, and an example scenario for customer relationship management systems.
- describe and differentiate the use and information structure of analytical information systems and their applications for management information.
- analyze and evaluate for given scenarios which business functions can be usefully deployed by which types of operational application systems and to describe the knowledge gained.

Contents

1. Categories of Operational Application Systems
   - 1.1 Terms, Objectives and Delimitation of Operational Application Systems
   - 1.2 Horizontal and Vertical Integration
   - 1.3 Example Scenario for the Use of Operational Application Systems
2. Systems for Handling Business Processes

2.1 Business Process Management Systems
2.2 Workflow Management Systems
2.3 Document Management Systems

3. Enterprise Resource Planning
   3.1 Motivation and Goals of Enterprise Resource Planning Systems
   3.2 Planning and Control of Operational Resources
   3.3 Planning and Control of Strategic Resources

4. Supply Chain Management
   4.1 Motivation and Objectives of Supply Chain Management Systems
   4.2 General Principles and Challenges in SCM
   4.3 Functions of SCM Systems
   4.4 Example Scenario for the Use of SCM Systems

5. Customer Relationship Management
   5.1 Motivation and Goals of Systems to CRM
   5.2 General Tasks of CRM
   5.3 Example Scenario for the Use of CRM Systems

6. Management Information Systems
   6.1 Analytical Information Systems and their Applications
   6.2 Information Structure from a Management Perspective
   6.3 Example Scenario for the Use of Management Information Systems

Literature

Compulsory Reading

Further Reading

- Bocij, P. (2018): Business Information Systems: Technology, Development and Management for the Modern Business. 6th Edition. Pearson.
- Kurbel, K. (2013): Enterprise Resource Planning and Supply Chain Management: Functions, Business Processes and Software for Manufacturing Companies (Progress in IS). Springer, London.
- Sharda, R. (2017). Business Intelligence, Analytics and Data Science: A Managerial Perspective. 4th Edition. Pearson.
- Vom Brocke, J., Simons, A. (2016): Enterprise Content Management in Information Systems Research: Foundations, Methods and Cases (Progress in IS). Springer, Heidelberg, New York.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Salesforce Consultant Specialization

Module Code: DLMSFCS

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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. Sebastian Werning (Salesforce Administrator and Service Cloud Consultant) / Prof. Dr. Sebastian Werning (Salesforce Sales Cloud Consultant)

Contributing Courses to Module

- Salesforce Administrator and Service Cloud Consultant (DLMSFCS01)
- Salesforce Sales Cloud Consultant (DLMSFCS02)

Module Exam Type

Module Exam	Split Exam
	Salesforce Administrator and Service Cloud Consultant • Study Format "Distance Learning": Written Assessment: Project Report • Study Format "myStudies": Written Assessment: Project Report Salesforce Sales Cloud Consultant • Study Format "Distance Learning": Oral Project Report • Study Format "myStudies": Oral Project Report

Weight of Module

see curriculum

Module Contents

Salesforce Administrator and Service Cloud Consultant

Using the learning platform Trailhead students will learn to administer the Salesforce platform. At the end of the course the students will be able to manage the Salesforce service cloud. This course is the preparation for the Salesforce Administrator Certification and Salesforce Service Cloud Certification.

Salesforce Sales Cloud Consultant

Using the learning platform Trailhead students will learn how to manage sales processes with Salesforce platform. At the end of the course the students will be able to manage the Salesforce sales cloud. This course prepares for the Salesforce Sales Cloud Consultant Certification.

Learning Outcomes

Salesforce Administrator and Service Cloud Consultant

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.
- setup customer service with Salesforce service cloud.
- lead a customer service team in the digital era.
- define service cloud goals and metrics.

Salesforce Sales Cloud Consultant

On successful completion, students will be able to

- setup sales management with Salesforce sales cloud.
- lead a sales team in the digital era.
- create digital engagement on multiple channels.
- define sales cloud goals and metrics.
- deploy sales processes for gathering competitive insights.

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 Master Programs in the Marketing & Communication field

Salesforce Administrator and Service Cloud Consultant

Course Code: DLMSFCS01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	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 explains how to administrate Salesforce and how to create processes to help supporting teams become more efficient and manage large data volumes within Salesforce. This course prepares students for the Salesforce Administrator Certification and Salesforce Service Cloud Certification.

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.
- setup customer service with Salesforce service cloud.
- lead a customer service team in the digital era.
- define service cloud goals and metrics.

Contents

- The content on the learning platform focuses on the features and functionality used to maintain a Salesforce implementation. The content provides general knowledge of the features available to end users and the configuration options available to a Salesforce Administrator. Furthermore, the content enables to perform administrative functions using current Salesforce features design solutions using the Service Cloud functionality and to lead the implementation of these solutions within a customer organization.

Literature

Compulsory Reading

Further Reading

- According to the Information given on the learning platform

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint

Salesforce Sales Cloud Consultant

Course Code: DLMSFCS02

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

Course Description

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

Course Outcomes

On successful completion, students will be able to

- setup sales management with Salesforce sales cloud.
- lead a sales team in the digital era.
- create digital engagement on multiple channels.
- define sales cloud goals and metrics.
- deploy sales processes for gathering competitive insights.

Contents

- The content on the learning platform focuses on designing and deploying solutions that support sales teams and sales processes using Salesforce applications. The content enables to design solutions using the Salesforce sales cloud functionality and to lead the implementation of these solutions within an organization.

Literature

Compulsory Reading

Further Reading

- According to the Information given on the learning platform

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Study Format myStudies

Study Format	Course Type
myStudies	Project

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

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

Instructional Methods
Tutorial Support ☑ Course Feed ☑ Intensive Live Sessions/Learning Sprint

Salesforce Developer Specialization

Module Code: DLMSFDS

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	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 (DLMSFDS01)
- Salesforce Platform Developer (DLMSFDS02)

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 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 the students will be able to use Apex, JavaScript, Visualforce and basic Lightning components. This course prepares for the Salesforce Platform Developer I and JavaScript 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 JavaScript to handle user interactions.
- 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 Master Programs in the Marketing & Communication field

Salesforce Platform App Builder

Course Code: DLMSFDS01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	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

- Benioff, M./Langley, M. (2019): Trailblazer. The Power of Business as the Greatest Platform for Change. 1st ed.
- Shaalan, S. (2020): Salesforce for Beginners. A step-by-step guide to creating, managing, and automating sales and marketing processes. Packt Publishing, Birmingham.
- Weinmeister, P. (2019): Practical Salesforce Development Without Code. Building Declarative Solutions on the Salesforce Platform. 2nd ed., Apress, Berkeley.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

Salesforce Platform Developer

Course Code: DLMSFDS02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	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 functionality 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 and JavaScript 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 JavaScript to handle user interactions.
- 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

- Gupta, R. (2019): Salesforce Platform App Builder Certification. A Practical Study Guide. 1st ed., Apress.
- 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	**Online Tests:** no
Type of Exam	Oral Project Report

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

Instructional Methods	
Learning Material	**Exam Preparation**
☑ Slides	☑ Guideline

4. Semester

Master Thesis

Module Code: MMTHE

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	none	MA	30	900 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) (Master Thesis) / Degree Program Advisor (SGL) (Colloquium)

Contributing Courses to Module

- Master Thesis (MMTHE01)
- Colloquium (MMTHE02)

Module Exam Type

Module Exam	Split Exam
	Master Thesis • Study Format "Distance Learning": Master Thesis (90) • Study Format "myStudies": Master Thesis (90) Colloquium • Study Format "Distance Learning": Colloquium (10) • Study Format "myStudies": Colloquium (10)

Weight of Module

see curriculum

Module Contents

Master Thesis

- Master's thesis

Colloquium

- Colloquium on the Master's thesis

Learning Outcomes

Master 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.
- analyse selected tasks with scientific methods, critically evaluate them and develop appropriate solutions under the guidance of an academic supervisor.
- record and analyse existing (research) literature appropriate to the topic of the Master'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 under consideration of academic presentation and communication techniques.
- reflect on the scientific and methodological approach chosen in the Master's thesis.
- actively answer subject-related questions from subject experts (experts of the Master's thesis).

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 Master Programmes in the Business & Management field(s).

Master Thesis

Course Code: MMTHE01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		27	none

Course Description

The aim and purpose of the Master'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 Master's thesis can be a practical-empirical or theoretical-scientific problem. Students should prove that they can independently analyse 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 to be chosen by the student from the respective field of study should not only prove the acquired scientific competences, but should also deepen and round off the academic knowledge of the student in order to optimally align his professional abilities and skills with the needs of the future field of activity.

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.
- analyse selected tasks with scientific methods, critically evaluate them and develop appropriate solutions under the guidance of an academic supervisor.
- record and analyse existing (research) literature appropriate to the topic of the Master's thesis.
- prepare a detailed written elaboration in compliance with scientific methods.

Contents

- Within the framework of the Master'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 his 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 ▪ Bui, Y. N. (2013). How to Write a Master's Thesis (2nd ed.). SAGE Publications, Incorporated. ▪ Turabian, K. L. (2013). A Manual for Writers of Research Papers, theses, and dissertations (8th ed.). University of Chicago Press. ▪ Further subject specific literature

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Thesis Course

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

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
810 h	0 h	0 h	0 h	0 h	810 h

Instructional Methods
Tutorial Support ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions

Study Format myStudies

Study Format	Course Type
myStudies	Thesis Course

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

Student Workload					
Self Study	**Contact Hours**	**Tutorial/Tutorial Support**	**Self Test**	**Independent Study**	**Hours Total**
810 h	0 h	0 h	0 h	0 h	810 h

Instructional Methods
Tutorial Support ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions

Colloquium

Course Code: MMTHE02

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

Course Description

The colloquium will take place after submission of the Master's thesis. This is done at the invitation of the experts. During the colloquium, the students must prove that they have fully 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, and the answering of questions by the experts.

Course Outcomes

On successful completion, students will be able to

- present a problem from their field of study under consideration of academic presentation and communication techniques.
- reflect on the scientific and methodological approach chosen in the Master's thesis.
- actively answer subject-related questions from subject experts (experts of the Master's thesis).

Contents

- The colloquium includes a presentation of the most important results of the Master's thesis, followed by the student answering the reviewers' technical questions.

Literature

Compulsory Reading

Further Reading

- Renz, K.-C. (2016): The 1 x 1 of the presentation. For school, study and work. 2nd edition, Springer Gabler, Wiesbaden.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Thesis Course

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

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

Instructional Methods	
Tutorial Support ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Learning Material** ☑ Slides

Study Format myStudies

Study Format	Course Type
myStudies	Thesis Course

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

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

Instructional Methods	
Tutorial Support ☑ Intensive Live Sessions/Learning Sprint ☑ Recorded Live Sessions	**Learning Material** ☑ Slides