MODULE HANDBOOK

Master of Science

Master Business and IT (FS-OI-EU-MBUIT-60)

60 CP

Distance Learning

As of April 23rd, 2024

INTERNATIONAL
UNIVERSITY OF
APPLIED SCIENCES

Classification: Consecutive

Contents

1. Semester

Applied Research

Module Code: DLMAF_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. Evangelos Zois (Applied Research)

Contributing Courses to Module

- Applied Research (DLMAF01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Fundamentals of Empirical Research
- The Empirical Research Process
- Qualitative Survey Research
- Standardized Survey Research
- Experimental Research
- Specifics of Research with Secondary and Observational Data

Learning Outcomes

Applied Research

On successful completion, students will be able to

- evaluate the type and quality of empirical research and of concrete empirical research results based on relevant criteria.
- identify appropriate data and research methods to empirically address a specific problem or research question.
- name and critically compare the process steps as well as the potentials, aims and limitations of different quantitative and qualitative research methods.
- recognize and consider basic ethical and legal aspects while conducting empirical research.
- design an empirical and theory-based study on their own to adequately address a specific applied research problem.

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 Programs in the Business & Management field

Applied Research

Course Code: DLMAF01_E

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

Course Description

The course teaches central concepts and methods of applied empirical research. The students acquire profound knowledge to evaluate the quality as well as the limitations of different empirical research approaches. First, students learn the central theoretical foundations of empirical research and the central process steps of empirical research projects. In doing so, students are also sensitised to the ethical and legal challenges. The course deals in depth with the application of central qualitative and quantitative research methods, for each of which the central goals and decision areas, their strengths, and weaknesses, as well as practical recommendations for application are discussed. The course enables students to develop an empirical study for an applied problem in their field or professional environment and to critically evaluate the quality of empirical findings as well as their validity.

Course Outcomes

On successful completion, students will be able to

- evaluate the type and quality of empirical research and of concrete empirical research results based on relevant criteria.
- identify appropriate data and research methods to empirically address a specific problem or research question.
- name and critically compare the process steps as well as the potentials, aims and limitations of different quantitative and qualitative research methods.
- recognize and consider basic ethical and legal aspects while conducting empirical research.
- design an empirical and theory-based study on their own to adequately address a specific applied research problem.

Contents

1. Fundamentals of Empirical Research
    - 1.1 Aims and Basic Approaches of Empirical Research
    - 1.2 Objectivity, Reliability, and Validity of Empirical Research
    - 1.3 Causality
2. The Empirical Research Process
    - 2.1 Determination of the Research Objective
    - 2.2 Choice of Research Design

- 2.3 Data Collection and Data Analysis
- 2.4 Interpretation and Presentation of Results
- 2.5 Ethical and Legal Aspects of Empirical Research

3. Qualitative Survey Research
   - 3.1 Fundamentals, Goals and Process Steps
   - 3.2 Central Forms of Data Collection
   - 3.3 Methods to Analyse Qualitative Data
   - 3.4 Quality Assessment

4. Standardized Survey Research
   - 4.1 Fundamentals, Goals and Process Steps
   - 4.2 Central Forms of Data Collection
   - 4.3 Questionnaire Design, Measurement and Operationalization
   - 4.4 Sampling and Sample Evaluation
   - 4.5 Quality Assessment

5. Experimental Research
   - 5.1 Fundamentals, Goals and Process Steps
   - 5.2 Types of Experiments and Experimental Designs
   - 5.3 Measurement and Manipulation of Variables
   - 5.4 Key Implementation Challenges
   - 5.5 Quality Assessment

6. Specifics of Research with Secondary and Observational Data
   - 6.1 Fundamentals, Goals and Specifics
   - 6.2 Selected Approaches to Analyse Secondary Data
   - 6.3 Selected Approaches to Analyse Observational Data

Literature

Compulsory Reading

Further Reading

- Flick, U. (2018). An Introduction to Qualitative Research (6th edition). Sage.
- Gravetter, F. J., & Forzano, L. A. B. (2018). Research Methods for the Behavioral Sciences (6th edition. Cengage Learning.
- Quinlan, C., Babin, B., Carr, J. Griffin, M., & Zikmund, W. G. (2019). Business Research Methods (2nd edition). Cengage Learning.
- Vomberg, A., & Klarmann, M. (2021). Crafting Survey Research: A Systematic Process for Conducting Survey Research. In C. Homburg, M. Klarmann, & A. E. (Eds.), Handbook of market research (pp. 1-53). 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: 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		

Process Management

Module Code: DLMWIWPBA1_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

Uma Santhosh Tumpala (Process Management)

Contributing Courses to Module

- Process Management (DLMWIWPBA01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

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

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.

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

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

Module Code: DLMWIWPBA2_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. Maik Drozdzynski (Operational Application Systems)

Contributing Courses to Module

- Operational Application Systems (DLMWIWPBA02_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

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

Learning Outcomes

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

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	

Digital Business Models

Module Code: DLMIDBM_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. Frank Passing (Digital Business Models)

Contributing Courses to Module

- Digital Business Models (DLMIDBM01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- History and success factors of digital business
- Trends in Digital Business
- Knowledge and evaluation of alternative business models in digital business
- Procedure for the development of strategic corporate positioning in digital business
- Knowledge of alternative financing models
- Goals and procedures for the creation of the business plan for digital business models

Learning Outcomes

Digital Business Models

On successful completion, students will be able to

- know the history and framework of digital business models.
- understand the basic principles of innovation management.
- know and understand different business models of the digital economy and be able to evaluate their advantages and disadvantages.
- understand the basics of strategic and operational business model planning in e-commerce.
- independently create a business plan for a digital business model.

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

Digital Business Models

Course Code: DLMIDBM01_E

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

Course Description

This course deals with IT-driven start-ups and business models. Based on the discussion of the historical development and framework conditions of digital business, alternative business models in digital business are systematically presented, analyzed and evaluated with regard to their respective strengths and weaknesses. Students study the central approaches to developing an independent corporate positioning and are enabled to autonomously examine and evaluate the central factors influencing corporate success in digital business. Further, alternative financing concepts for digital business models are presented and critically evaluated and the central components of a business plan are detailed. In addition, the entire process of creating and defining a business plan is presented in detail and tested using practical examples.

Course Outcomes

On successful completion, students will be able to

- know the history and framework of digital business models.
- understand the basic principles of innovation management.
- know and understand different business models of the digital economy and be able to evaluate their advantages and disadvantages.
- understand the basics of strategic and operational business model planning in e-commerce.
- independently create a business plan for a digital business model.

Contents

1. Innovation Management and Business Model Definitions
   - 1.1 Basic Concepts of Innovation Management Regarding Digital Business Models
   - 1.2 Business Models: Genesis - Definition - Relation to Innovation
   - 1.3 Specifics of Digital Business Models and Comparison to Traditional Approaches
2. Digital Business Models: Definition and Elements
   - 2.1 New Elements of Digital Business Models
   - 2.2 Redefinition and Core Elements of Digital Business Models
   - 2.3 Value Architecture and Value Mechanics
3. Basic Architectures, Standard Patterns and Network Integration
   - 3.1 Basic Digital Business Model Architectures

Literature

Compulsory Reading

Further Reading

- Ahmed, P. K./Shepherd, C. D. (2010): Innovation Management. Context, strategies, systems and processes. Prentice Hall, Upper Saddle River, NJ.
- Bessant, J. R. / Tidd, J. (2018) : Innovation and entrepreneurship. 3rd edition, JOHN WILEY & Sons, Chichester.
- Brynjolfsson, E./Hu, J. Y./Smith, M. D. (2006): From Niches to Riches. Anatomy of the Long Tail. In: Sloan Management Review, 47. Jg., Heft 4, S. 67–71.
- Brynjolfsson, E./Smith M. D. (2000): Frictionless Commerce? A Comparison of Internet and Conventional Retailers. In: Management Science, 46. Jg., Heft 4, S. 563–585.
- Brynjolfsson, E./Hu, J. Y./Rahman, M. (2009): Battle of the Retail Channels. How Product Selection and Geography Drive Cross-Channel Competition. In: Management Science, 55. Jg., Heft 11, S. 1755–1765.
- Chaffey, D./Ellis-Chadwick, F. (2012): Digital Marketing. Strategy, Implementation and Practice. 5th edition, Pearson Education, London.
- Hanson, W./Kalyanam, K. (2007): Internet Marketing and e-Commerce. 2nd edition, Cengage, Boston, MA.
- Laudon, K./Traver, C. G. (2011): E-Commerce. 7th edition, Prentice Hall, Upper Saddle River, NJ.
- Lynch, J./Ariely, D. (2000): Wine Online. Search Costs and Competition on Price, Quality, and Distribution. In: Marketing Science, 19. Jg., Heft 1, S. 83–103.
- Osterwalder, A. / Pigneur, Y. / Clark, T. (2010): Business model generation: A handbook for visionaries, game changers, and challengers. Wiley, Hoboken, NJ.
- Rogers, D. L. (2016): The digital transformation playbook: Rethink your business for the digital age. Columbia Business School Publishing, New York.
- Varian, H. (2000): When Commerce Moves Online. Competition Can Work in Strange Ways. In: New York Times, 24 August 2000.
- Wirtz, B. W. (2019): Digital Business Models: Concepts, Models, and the Alphabet Case Study. Progress in IS. Springer International Publishing, Cham.
- Woerner, S. / Weill, P. (2018): What's Your Digital Business Model?: Six Questions to Help You Build the Next-Generation Enterprise: Harvard Business Review.

Study Format Distance Learning

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

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

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

- 2.3 Prerequisites of the Implementation

3. Information Management in the Workplace
   - 3.1 The Change of Existing Workflows Through IT
   - 3.2 Accepantce and Work-Appropriate Use of IT-Systems
   - 3.3 E-Mail Systems and Their Alternatives

4. Data Management Scenarios
   - 4.1 Document Management
   - 4.2 Administration and Accounting
   - 4.3 Materials Management
   - 4.4 Order Processing
   - 4.5 Supply Chains

5. Information Management Scenarios
   - 5.1 Planning
   - 5.2 Control
   - 5.3 Relationship Management
   - 5.4 Information Distribution (Content Management)
   - 5.5 Organization
   - 5.6 Cooperation & Communication
   - 5.7 Decision Support

6. Knowledge-Based Systems
   - 6.1 Knowledge Representation in Software (Ontologies)
   - 6.2 Case-Based Storage of Knowledge
   - 6.3 Rule-Based Storage of Knowledge
   - 6.4 Inference Machines
   - 6.5 Expert Support Systems

7. Knowledge Management
   - 7.1 Psychological Aspects of Knowledge Distribution
   - 7.2 Knowledge Sharing
   - 7.3 Knowledge and Learning

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	

Cyber Security and Data Protection

Module Code: DLMCSITSDP

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. Ralf Kneuper (Cyber Security and Data Protection)

Contributing Courses to Module

- Cyber Security and Data Protection (DLMCSITSDP01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Data protection and privacy
- Cyber security building blocks
- Cyber security management
- Cryptography concepts
- Cryptography applications

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.

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 Programmes 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	

2. Semester

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

Prof. Dr. Inga Schlömer (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

Management of Requirements, IT Services, and Architecture

Module Code: DLMWIWATIM_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

Michael Malik (Requirements Management) / Prof. Dr. Andrew Adjah Sai (Management of IT Services and Architecture)

Contributing Courses to Module

- Requirements Management (DLMPRERM01)
- Management of IT Services and Architecture (MWIT02-01_E)

Module Exam Type

Module Exam	Split Exam
	Requirements Management • Study Format "Distance Learning": Exam or Oral Assignment, 90 Minutes Management of IT Services and Architecture • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Requirements Management

- Basics and Drivers of Requirements Management
- Classification and Terms of Requirements Management
- Requirements Management Tasks
- Methods and Quality of Requirements Management
- Process and Industry-Specific Needs of Requirements Management
- Critical Reflection

Management of IT Services and Architecture

- IT Service Management Basics and Terms
- ITIL 4 - Basics and Four Dimensions
- ITIL 4 - Service Value System
- ITIL 4 - Principles
- ITIL 4 - Practices
- IT Architecture Management Basics and Terms
- IT Application Portfolio Management
- Architecture Governance

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.

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 Project Management and Computer Science & Software Development	All Master Programs in the Business & Management and IT & Technology fields

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	

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	

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
- 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 ▪ 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	

UI/UX Expert

Module Code: DLMAIEUIUX

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum		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
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

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. ▪ Cooper, A., Reimann, R., Cronin, D., & Noessel, C. (2014). About face: The essentials of interaction design. Wiley. ▪ Johnson, J. (2010). Designing with the mind in mind. Elsevier. ▪ Microsoft Windows Dev Center. (2018). Guidelines. Retrieved from https://docs.microsoft.com/en-us/windows/desktop/uxguide/guidelines ▪ Preece, J., Sharp, H., & Rogers, Y. (2015). Interaction design: Beyond human-computer interaction. Wiley. ▪ Unger, R., & Chandler, C. (2012). A project guide to UX design. New Riders.

Study Format myStudies

Study Format myStudies	**Course Type**

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

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

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

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Project

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

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

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

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

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	

Supply Chain and Sourcing Management

Module Code: MWCH_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. Sebastian Stütz (Global Supply Chain Management) / Prof. Dr. Sebastian Stütz (Supply Chain Risk Management and Controlling)

Contributing Courses to Module

- Global Supply Chain Management (MWCH01_E)
- Supply Chain Risk Management and Controlling (MWCH02_E)

Module Exam Type

Module Exam	Split Exam
	Global Supply Chain Management • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Supply Chain Risk Management and Controlling • Study Format "myStudies": Exam, 90 Minutes • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Global Supply Chain Management

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

Supply Chain Risk Management and Controlling

- SCM instruments
- Controlling systems in value networks
- Risk management in value networks

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.

Supply Chain Risk Management and Controlling

On successful completion, students will be able to

- assess tasks of the controlling department and evaluate problems in implementation of controlling systems in supply chains.
- assess the significance of key figures in supply chain controlling and know how these are used.
- reflect on instruments of SC controlling and determine combinations of classical and innovative controlling instruments.
- determine when SCM software is used in controlling and what is required for their implementation.
- explain the tools of controlling and apply them in practice.
- name and explain options that influence the success of a supply chain, why risk management is carried out within supply chains and compatible strategies for supply chains.
- understand the organizational design with System Dynamics and the use in the supply chain 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 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

- 2.5 Efficient Replenishment

3. Problem-oriented concepts and corresponding management concepts
   - 3.1 Problems in the supply chain
   - 3.2 Interfaces in the Supply Chain
   - 3.3 The Bullwhip Effect
   - 3.4 Collaborative Planning, Forecasting and Replenishment (CPFR)

4. Tasks and goals of the SCM
   - 4.1 Tasks in Supply Chain Management
   - 4.2 Goals of Supply Chain Management
   - 4.3 Sustainable Supply Chain Management (SSCM)

5. Cooperation and coordination
   - 5.1 The Corporate Strategy
   - 5.2 Sensible corporate strategies: Instruments and Methods
   - 5.3 Strategic alliances in the context of supply chain management
   - 5.4 Requirements for successful cooperation
   - 5.5 Bundling of activities and process adjustments in cooperations

6. Supply, disposal and recycling strategies
   - 6.1 Supply strategies
   - 6.2 Disposal strategies
   - 6.3 Recycling, reuse/recycling and the corresponding strategies

7. Quality assurance
   - 7.1 Quality management systems
   - 7.2 Quality Assurance in Supply Chain Management
   - 7.3 Methods in quality management
   - 7.4 Instruments in organizational design

8. Information retrieval
   - 8.1 Information Technology in Supply Chain Management
   - 8.2 Business Software
   - 8.3 The Balanced Scorecard as a control instrument

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 ☑ Intensive Live Sessions/Learning Sprint	☑ Course Book	☑ Online Tests

Supply Chain Risk Management and Controlling

Course Code: MWCH02_E

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

Course Description

Global value networks prove to be particularly dynamic and sometimes fragile constructions. This observation draws attention to two important aspects of SCM: On the one hand, the need to develop an effective and efficient controlling system for such supply chains. The controlling information generated via key figure systems can make important contributions to the stabilization and optimization of the value-added network. On the other hand, to the necessity of a systematic risk management, with the focus on early identification and future prospects.

Course Outcomes

On successful completion, students will be able to

- assess tasks of the controlling department and evaluate problems in implementation of controlling systems in supply chains.
- assess the significance of key figures in supply chain controlling and know how these are used.
- reflect on instruments of SC controlling and determine combinations of classical and innovative controlling instruments.
- determine when SCM software is used in controlling and what is required for their implementation.
- explain the tools of controlling and apply them in practice.
- name and explain options that influence the success of a supply chain, why risk management is carried out within supply chains and compatible strategies for supply chains.
- understand the organizational design with System Dynamics and the use in the supply chain management.

Contents

1. Basics of controlling in and of supply chains
   - 1.1 Conceptual design of controlling in supply chain management systems
   - 1.2 The importance of controlling in the supply chain
   - 1.3 Cost Tracking
   - 1.4 Different types of supply chain controlling
2. Key figure systems in the supply chain 2.1 Meaning of key figures
   - 2.1 Types of key figures in the supply chain

Literature

Compulsory Reading

Further Reading

- 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.

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 ☑ Intensive Live Sessions/Learning Sprint	☑ Course Book	☑ Online Tests

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Strategic Marketing and Branding

Module Code: MWMA_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. Anju Yu (Global Branding) / Prof. Dr. Josephine Zhou-Brock (Customer Relationship Marketing)

Contributing Courses to Module

- Global Branding (MWMA01_E)
- Customer Relationship Marketing (MWMA02_E)

Module Exam Type

Module Exam	Split Exam
	Global Branding • Study Format "Distance Learning": Exam, 90 Minutes Customer Relationship Marketing • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Global Branding

- Positioning of brands
- Branding
- International brand management
- Brand Controlling
- Measurement of brand status and brand equity

Customer Relationship Marketing

- 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

Global Branding

On successful completion, students will be able to

- identify and understand the key challenges for international brands
- recognize the current strategy of a brand.
- analyze the brand equity of a brand.
- identify the factors that could lead to the increase or loss of consumer-based brand equity.
- develop well-founded ideas for future design options for a brand strategy.

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 fields of Marketing & Sales	All Master Programs in the Marketing & Communication fields

Global Branding

Course Code: MWMA01_E

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

Course Description

Strong brands create a strong appeal to customers, employees, stakeholders and investors and increase the commitment of employees to the company. They create sustainable value. The management of national and international brands is therefore at the heart of market-oriented corporate management. At a time when products, prices and distribution are becoming more and more similar worldwide, the brand is becoming increasingly important for creating and expanding long-term, profitable customer relationships. Global growth in international markets poses particular challenges for the brand management of companies.

Course Outcomes

On successful completion, students will be able to

- identify and understand the key challenges for international brands
- recognize the current strategy of a brand.
- analyze the brand equity of a brand.
- identify the factors that could lead to the increase or loss of consumer-based brand equity.
- develop well-founded ideas for future design options for a brand strategy.

Contents

1. Necessity and Importance of Brand Management
   - 1.1 What Exactly is a Brand?
   - 1.2 General Conditions on National and International Markets
   - 1.3 Relevance of Brands for Customers
   - 1.4 Relevance of Brands for Companies
2. Goal of Brand Management
   - 2.1 Brand Equity as a Control Parameter for the Definition of Brand Objectives
   - 2.2 The Brand Steering Wheel for Brand Identity Development
   - 2.3 Developing the Personality of a Brand
3. Positioning of Brands
   - 3.1 What is Brand Positioning?
   - 3.2 Different Positioning Goals for Brands

10.2 Diagnostic Measurements of Brand Status
10.3 Evaluative Measurements of Brand Equity

Literature

Compulsory Reading

Further Reading

- Keller, K. (2019). Strategic brand management: Building, measuring, and managing brand equity (global ed.). Pearson Education.
- Burmann, C., Riley, N.-M., Halaszovich, T. F., & Schade, M. (2017). Identity-based brandmanagement: Fundamentals - Strategy - Implementation - Controlling. Springer Gabler.
- Kapferer, J. (2012). The new strategic brand management: Advanced insights and strategic thinking (New strategic brand management: Creating & sustaining brand equity; 5th ed.). KoganPage.

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	

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

- 2.2 Verhaltenswirkung beim Kunden
- 2.3 Ermittlung des Kundenwerts

3. Kundengewinnung
   - 3.1 Strategien der Kundenakquisition
   - 3.2 Instrumente der Neukundengewinnung
   - 3.3 Neukundenmanagement

4. Kundenbindung
   - 4.1 Kundenbindungsmanagement
   - 4.2 Kundenprogramme und andere Kundenbindungsinstrumente
   - 4.3 Beschwerdemanagement

5. Kundenrückgewinnung
   - 5.1 Rückgewinnungsmanagement
   - 5.2 Analyse der Abwanderung
   - 5.3 Instrumente der Kundenrückgewinnung

6. Operative und analytische CRM-Prozesse
   - 6.1 IT-Systeme im CRM
   - 6.2 Operatives CRM: Kampagnenmanagement und Leadmanagement
   - 6.3 Analytisches CRM: Datenverarbeitung und Datenanalyse
   - 6.4 Social CRM

7. CRM in ausgewählten Sektoren
   - 7.1 CRM im Konsumgüterbereich
   - 7.2 CRM im Investitionsgüterbereich
   - 7.3 CRM im Dienstleistungssektor

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
	☑ Audio	
☑ Recorded Live Sessions	☑ Slides	

Cloud Computing

Module Code: DLMWIWCC_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum		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

Introduction to Data Science and AI

Module Code: DLMWIWDSAI-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. Simon Steinberg (Data Science) / Prof. Dr. Claudia Heß (Artificial Intelligence)

Contributing Courses to Module

- Data Science (DLMBDSA01-01)
- Artificial Intelligence (DLMAIAI01)

Module Exam Type

Module Exam	Split Exam
	Data Science • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Artificial Intelligence • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Data Science

- Introduction to Data Science
- Use Cases and Performance Evaluation
- Pre-Processing of Data
- Processing of Data
- Selected Mathematical Techniques
- Selected Artificial Intelligence Techniques

Artificial Intelligence

- History of AI
- Expert Systems
- Neuroscience
- Modern AI Systems
- AI Application Areas

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.

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 Master Programs in the IT & Technology field

Data Science

Course Code: DLMBDSA01-01

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 Data Science Activities
   - 1.3 Sources and Types of Data
   - 1.4 Stages of Data Processing
   - 1.5 Mathematical Basics for Data Scientists
2. Use Cases and Performance Evaluation
   - 2.1 Data Science Use Cases (DSUCs)
   - 2.2 Model-Centric Evaluation: Performance Metrics
   - 2.3 Business-Centric Evaluation: the Role of KPIs

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 Distance Learning

Study Format	Course Type
Distance Learning	Theory Course

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

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

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

Study Format myStudies

Study Format	**Course Type**
myStudies	Theory Course

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

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

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

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
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

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

AI and Mastering AI Prompting

Module Code: DLMEAIMAIP

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. Claudia Heß (Artificial Intelligence) / Prof. Dr. Gissel Velarde Perez (Project: AI Excellence with Creative Prompting Techniques)

Contributing Courses to Module

- Artificial Intelligence (DLMAIAI01)
- Project: AI Excellence with Creative Prompting Techniques (DLMPAIECPT01)

Module Exam Type

Module Exam	Split Exam
	Artificial Intelligence • Study Format "Distance Learning": Exam, 90 Minutes • Study Format "myStudies": Exam, 90 Minutes Project: AI Excellence with Creative Prompting Techniques • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Artificial Intelligence

- History of AI
- Expert Systems
- Neuroscience
- Modern AI Systems
- AI Application Areas

Project: AI Excellence with Creative Prompting Techniques

In this module, students delve into the world of generative AI applications, creating AI-generated content such as text, images, and videos. They learn to design, analyze, and evaluate different prompting techniques in these systems and apply them within their respective fields of study.

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.

Project: AI Excellence with Creative Prompting Techniques

On successful completion, students will be able to

- comprehend and implement various prompting techniques in generative AI applications.
- analyze, assess, and combine different prompt techniques for various expected AI outputs.
- implement ethical considerations into the design and execution of various generative AI applications.
- design, implement, and refine effective prompts and their combinations for real-world scenarios through various hands-on exercises.
- showcase creative and innovative thinking and reasoning in the application of advanced prompting techniques to solve multidimensional problems in their specialized area of 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 field of Data Science & Artificial Intelligence	All Master Programs 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
☑ Recorded Live Sessions	☑ Audio	
	☑ Slides	

Study Format myStudies

Study Format	Course Type
myStudies	Theory Course

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

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

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

Project: AI Excellence with Creative Prompting Techniques

Course Code: DLMPAIECPT01

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

Course Description

In this course, students explore the exciting world of prompting in various generative AI applications. They involve themselves in hands-on exercises that combine various prompting techniques to create new AI-generated content, including text, images, and videos. Through these exercises, students learn how to effectively use, analyze, combine, and assess these systems within their specialized fields of study.

Course Outcomes

On successful completion, students will be able to

- comprehend and implement various prompting techniques in generative AI applications.
- analyze, assess, and combine different prompt techniques for various expected AI outputs.
- implement ethical considerations into the design and execution of various generative AI applications.
- design, implement, and refine effective prompts and their combinations for real-world scenarios through various hands-on exercises.
- showcase creative and innovative thinking and reasoning in the application of advanced prompting techniques to solve multidimensional problems in their specialized area of study.

Contents

- In this course, students engage in a practical application of a generative AI use case by choosing from the options provided in the extensive supplementary guide. The course presents practical examples as study materials and exercises with both individual and combined prompting techniques for open-source text, image, and video generation use cases. The exercises are crafted to inspire and lead students in executing their distinct generative AI use case work and provide guidance on describing the use case and selecting a mixture of prompting techniques. Additionally, students are led to critically evaluate the design, implementation, and the outcomes from both technical and ethical perspectives.

Literature
Compulsory Reading
Further Reading ▪ Dang, H., Mecke, L., Lehmann, F., Goller, S., & Buschek, D. (2022). How to prompt? Opportunities and challenges of zero- and few-shot learning for human-AI interaction in creative applications of generative models. arXiv. https://arxiv.org/pdf/2209.01390.pdf ▪ Epstein, Z., Hertzmann, A., Herman, L., Mahari, R., Frank, M. R., Groh, M., Schroeder, H., Smith, A., Akten, M., Fjeld, J., Farid, H., Leach, N., Pentland, A. S., & Russakovsky, O. (2023). Art and the science of generative AI: A deeper dive. arXiv. https://arxiv.org/pdf/2306.04141.pdf ▪ Gozalo-Brizuela, R., & Garrido-Merchán, E. C. (2023). A survey of generative AI applications. arXiv. https://arxiv.org/pdf/2306.02781.pdf ▪ Wei, J., Wang, X., Schuurmans, D., Bosma, M. Ichter, B., Xia, F., Chi, E. H., Le., Q. V., & Zhou, D. (2023). Chain-of-though prompting elicit reasoning in large language models. arXiv. https://arxiv.org/pdf/2201.11903.pdf

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

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

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

Master Thesis

Module Code: DLMMTHES

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	See current study and exam regulations (SPO)	MA	15	450 h

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

Module Coordinator

Prof. Dr. Tianxiang Lu (Master Thesis) / Prof. Dr. Tianxiang Lu (Colloquium)

Contributing Courses to Module

- Master Thesis (DLMMTHES01)
- Colloquium (DLMMTHES02)

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 "myStudies": Colloquium (10) • Study Format "Distance Learning": Colloquium (10)

Weight of Module

see curriculum

Module Contents

Master Thesis

- Written Master Thesis

Colloquium

- Thesis Defense

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**
All modules in the Master Program	All Master Programs

Master Thesis

Course Code: DLMMTHES01

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		13.5	See current study and exam regulations (SPO)

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**
405 h	0 h	0 h	0 h	0 h	405 h

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

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**
405 h	0 h	0 h	0 h	0 h	405 h

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

Colloquium

Course Code: DLMMTHES02

Study Level	Language of Instruction and Examination	Contact Hours	CP	Admission Requirements
MA	English		1.5	See current study and exam regulations (SPO)

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 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**
45 h	0 h	0 h	0 h	0 h	45 h

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

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**
45 h	0 h	0 h	0 h	0 h	45 h

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