MODULE HANDBOOK

Master of Arts

Master Information Technology Management (FS-OI-MAITE-60)

60 ECTS

Distance Learning

INTERNATIONAL
UNIVERSITY OF
APPLIED SCIENCES

Contents

2021-12-01

1. Semester

IT Systems: Software

Module Code: DLMIMITSS_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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Christian Prause (IT Systems: Software)

Contributing Courses to Module

- IT Systems: Software (DLMIMITSS01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Basics of software development
- Data formats and coding
- Firmware and operating systems
- Classification and application areas of desktop applications
- Databases
- Application-specific software systems in the company
- Ergonomic aspects of computer workstation design and human-machine interaction

Learning Outcomes

IT Systems: Software

On successful completion, students will be able to

- understand the basics of software development.
- evaluate data formats and their application in different scenarios.
- understand the storage and processing of complex data and information.
- evaluate operating systems and their conceptual differences for application and security.
- understand the application areas of typical desktop applications and assess their limitations.
- differentiate database-based enterprise solutions and evaluate their usefulness for business applications.
- identify requirements for computer workstations and implement suitable solutions.

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

IT Systems: Software

Course Code: DLMIMITSS01_E

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

Course Description

The course introduces the function and application areas of typical software systems used in companies. Concepts of software development and programming languages form the basis for this. The course provides the necessary knowledge about data formats, their conversion, compression and transformation in order to apply them to the representation of complex data. It describes operating systems for local and mobile computers and their conceptual differences and areas of application. Based on this, typical desktop applications from text to graphics processing are introduced and their field of application is explained. After an introduction to the concept of databases, typical server-based solutions for information management are discussed. The course concludes with an examination of ergonomic software aspects and human-machine interaction.

Course Outcomes

On successful completion, students will be able to

- understand the basics of software development.
- evaluate data formats and their application in different scenarios.
- understand the storage and processing of complex data and information.
- evaluate operating systems and their conceptual differences for application and security.
- understand the application areas of typical desktop applications and assess their limitations.
- differentiate database-based enterprise solutions and evaluate their usefulness for business applications.
- identify requirements for computer workstations and implement suitable solutions.

Contents

1. Basics of software development
   - 1.1 Fundamentals of programming and programming languages
   - 1.2 Software lifecycle
   - 1.3 Software licensing models and patenting

2. Data formats
   - 2.1 ASCII code, Unicode and markup languages
   - 2.2 Page description languages (HTML, XHTML, HTML5)
   - 2.3 Script languages for web applications
   - 2.4 Text formats
   - 2.5 Raster, vector and meta graphic formats (PNG, TIFF, JPEG, SVG, WMF)

3. Conversion, compression and transformation of data
   - 3.1 Data conversion (XMI, Transcoding)
   - 3.2 Data compression
   - 3.3 Data transformation
   - 3.4 Application to audiovisual data

4. System software
   - 4.1 Firmware, BIOS, UEFI
   - 4.2 Operating systems for end users
   - 4.3 Server-based operating systems
   - 4.4 Mobile operating systems

5. Desktop applications
   - 5.1 Office software
   - 5.2 Graphics and image processing programs
   - 5.3 Software for mathematics and statistics
   - 5.4 Desktop publishing and visualization
   - 5.5 Audio and video systems

6. Database systems
   - 6.1 Relational databases and SQL
   - 6.2 NoSQL and non-relational databases
   - 6.3 In-memory databases
   - 6.4 Data warehouses

7. Business information systems
   - 7.1 Web-based systems and cloud solutions
   - 7.2 Document and content management
   - 7.3 Resource-based information management
   - 7.4 Knowledge management, dashboards and expert systems

8. Ergonomics at the computer workstation
   - 8.1 Anthropometry and system ergonomics
   - 8.2 Product and production ergonomics
   - 8.3 Computer workstation ergonomics
   - 8.4 Software ergonomics
   - 8.5 Design aspects of the graphical user interface

Literature

Compulsory Reading

Further Reading

- Bourke, P./Fairley, R.E. (Hrsg.) (2014): SWEBOK V3.0 – Guide to the Software Engineering Body of Knowledge. IEEE Computer Society.
- Chambers, J.M. (2014): Object-Oriented Programming, Functional Programming and R. Statistical Science. 29. Jg., Heft 2, S.167–180.
- Tanenbaum, A.S. (2016): Modern Operating Systems. 4th edition, Pearson India, Delhi/Chennai.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

IT Systems: Hardware

Module Code: DLMIMITSH_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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Damir Ismailovic (IT Systems: Hardware)

Contributing Courses to Module

- IT Systems: Hardware (DLMIMITSH01_E)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Computer Arithmetics
- Integrated Circuits
- Storage systems
- Input/output systems
- Fundamentals of data transmission
- Computer networks
- Server and data centers

Learning Outcomes

IT Systems: Hardware

On successful completion, students will be able to

- understand computer arithmetic and to apply it to logical problems.
- know the components of computer systems and explain their functional principles.
- differentiate methods of data transmission and evaluate their conceptual differences in application.
- evaluate computer network technologies and their fields of application.
- know and assess requirements for the construction and operation of data centers.

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

IT Systems: Hardware

Course Code: DLMIMITSH01_E

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

Course Description

This course provides an understanding of how computer-based systems work and serves as a basis for communication and leadership for appropriate information technology professionals. It describes the logic with which digital computers work and the technique of creating digital circuits. It also explains the structure of typical computer systems and the functioning of processors, memory devices and peripheral input and output devices. The course clarifies the basics of communications engineering and compares the application criteria of wired and wireless data transmission technologies. On this basis, small server infrastructures, mainframes and supercomputers are introduced and knowledge about the construction and operation of data centers is taught.

Course Outcomes

On successful completion, students will be able to

- understand computer arithmetic and to apply it to logical problems.
- know the components of computer systems and explain their functional principles.
- differentiate methods of data transmission and evaluate their conceptual differences in application.
- evaluate computer network technologies and their fields of application.
- know and assess requirements for the construction and operation of data centers.

Contents

1. Basics of computer arithmetics
   - 1.1 value arithmetic, numeral systems
   - 1.2 propositional logic and boolean operators
   - 1.3 Computer Arithmetics
2. Integrated Circuits
   - 2.1 Integrated circuits and semiconductor production
   - 2.2 Parallel and serial interfaces
   - 2.3 Mainboard components
   - 2.4 Processors and memory

3. Storage systems
   - 3.1 Hard disk space
   - 3.2 Optical storage media
   - 3.3 Magnetic storage media
   - 3.4 Solid State Disk

4. Input/output systems
   - 4.1 Input Devices
   - 4.2 Touch Screen Systems
   - 4.3 Graphical output devices
   - 4.4 Printer Systems

5. Fundamentals of data transmission
   - 5.1 Wired data transmission and modulation
   - 5.2 Transmission via light
   - 5.3 Antennas and satellite technology
   - 5.4 Mobile networks
   - 5.5 RFID and Near-Field Communication

6. Computer networks
   - 6.1 Network Topology
   - 6.2 Ethernet frame and network protocols
   - 6.3 Switching, routing and data flow control
   - 6.4 Network diagnostics

7. Server and data centers
   - 7.1 Data center Tier Classification Standard
   - 7.2 Server systems, mainframes and supercomputers
   - 7.3 Building data centers
   - 7.4 Data center security and operations aspects
   - 7.5 Principles of virtualization

Literature
Compulsory Reading
Further Reading ▪ Gomez, M. et al (eds.) (2017) : Engineering and Management of Data Centers: An IT Service Management Approach. Springer International Publishing, Cham. ▪ Hwaiyu Geng, P.E. (2014): Data Center Handbook. John Wiley & Sons, New York City, NY. ▪ Tanenbaum, A. / Austin, T. (2012): Structured Computer Organization. 6th edition, Pearson, London. ▪ Tanenbaum, A. / van Stehen, M. (2016): Distributed Systems: Principles and Paradigms. 2nd edition, CreateSpace Independent Publishing Platform. ▪ Tanenbaum, A. / Wetherall, D. (2010): Computer Networks. 5th edition, Pearson, London.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Networks and Distributed Systems

Module Code: DLMCSNDS

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Paul Libbrecht (Networks and Distributed Systems)

Contributing Courses to Module

- Networks and Distributed Systems (DLMCSNDS01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Communication Networks
- Communication Protocols
- Distributed System Architectures
- Distributed Algorithms and Applications

Learning Outcomes

Networks and Distributed Systems

On successful completion, students will be able to

- explain the basic concepts of digital data transmission and computer networks.
- detail the ISO/OSI reference model and characterize aspects of its different layers.
- compare the ISO/OSI model to the TCP/IP protocol stack, its services, and its applications.
- elaborate on different approaches and architectures for distributed systems.
- describe the challenges and opportunities of distributed algorithms and applications.
- analyze different aspects of decentralized, mobile, and pervasive computing.

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

Networks and Distributed Systems

Course Code: DLMCSNDS01

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

Course Description

Isolated computer systems are becoming the exception, with modern systems typically connected to each other via networks. Through these networks, data is constantly exchanged via the internet using communication protocols. These allow modern computers to access data and functions from other computer systems, enabling distributed systems. In this distributed Systems algorithms and applications are partially mapped to different entities within the network to perform shared computing tasks. The knowledge transfer regarding the required technologies, architectures, and algorithms for doing so is the focus of this course.

Course Outcomes

On successful completion, students will be able to

- explain the basic concepts of digital data transmission and computer networks.
- detail the ISO/OSI reference model and characterize aspects of its different layers.
- compare the ISO/OSI model to the TCP/IP protocol stack, its services, and its applications.
- elaborate on different approaches and architectures for distributed systems.
- describe the challenges and opportunities of distributed algorithms and applications.
- analyze different aspects of decentralized, mobile, and pervasive computing.

Contents

1. Computer Networks
   - 1.1 Basic Concepts of Digital Data Transmission
   - 1.2 Network Topologies and Interconnections
   - 1.3 Basics of Communication Engineering and Coding Theory
   - 1.4 The Physical Layer: Transmission Methods and Media
2. Communication Protocols
   - 2.1 The ISO/OSI Reference Model
   - 2.2 The Data Link Layer: Standards and Technologies
   - 2.3 The Network Layer: Addressing and Routing
   - 2.4 The Transport Layer: Reliability and Flow Control

3. The Internet Protocol Suite
   - 3.1 History of the Internet and the World Wide Web
   - 3.2 The TCP/IP Reference Model and Protocol Stack
   - 3.3 Examples of Internet Protocols and Services
   - 3.4 Security Aspects of Communication on the Internet

4. Architectures of Distributed Systems
   - 4.1 Client-Server Architectures
   - 4.2 Service-Oriented Architectures, Web- and Micro-Services
   - 4.3 Edge and Cloud Computing
   - 4.4 Peer-to-Peer Computing

5. Distributed Algorithms and Applications
   - 5.1 Communication and Synchronization in Distributed Systems
   - 5.2 Distributed Algorithms (Concurrency and Parallel Processing)
   - 5.3 Transactions and Data Management (Consistency and Replication)
   - 5.4 Security Aspects for Distributed Services and Applications

6. From Distributed Systems to Ubiquitous Computing
   - 6.1 Aspects of Decentralized Applications (Distributed Ledger Technology)
   - 6.2 Aspects of Mobile Computing (Networks, Protocols and Applications)
   - 6.3 Aspects of Pervasive Computing and the Internet of Things

Literature

Compulsory Reading

Further Reading

- Tanenbaum, A. S., & Wetherall, D. J. (2014). Computer networks: New international edition (5th ed.). Harlow, Essex: Pearson Education.
- Comer, D. E. (2015). Computer networks and internets, global edition (6th ed.). Harlow, Essex: Pearson Education.
- Kurose, J., & Keith R. (2017). Computer networking: A top-down approach, global edition (7th ed.). Harlow, Essex: Pearson Education.
- Comer, D. E. (2018). The internet Book: Everything you need to know about computer networking and how the internet works (5th ed.). Boca Raton, FL: CRC Press.
- Van Steen, M., & Tanenbaum, A. S. (2017). Distributed systems (3rd ed.). CreateSpace Independent Publishing Platform.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

DLMCSNDS01

IT Governance and Compliance

Module Code: DLMBITGSM2

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. André Köhler (IT Governance and Compliance)

Contributing Courses to Module

- IT Governance and Compliance (DLMBITGSM02)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Establishing IT governance and compliance
- COBIT framework
- IT governance frameworks
- Data protection and data security

Learning Outcomes

IT Governance and Compliance

On successful completion, students will be able to

- explain IT governance and compliance both as tools to achieve organizational goals and to satisfy regulatory requirements.
- know the different IT governance frameworks given, in particular the industry standard model COBIT.
- set out the processes and policies for administering and managing IT systems for ensuring compliance with local and international regulatory requirements.
- understand that ensuring compliance with the IT governance framework can be a daunting task that requires constant collection, organization, monitoring, analysis and reporting on event logs to detect and manage control-related activity.
- recognize the IT governance and compliance monitoring tools for ensuring that controls for information systems are effectively implemented, monitored, and maintained.

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

IT Governance and Compliance

Course Code: DLMBITGSM02

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

Course Description

IT governance and compliance are key elements within corporate governance, since most modern businesses rely heavily on IT infrastructure for their success. These elements detail the required leadership and organizational structures for maintaining and extending information technology in order to meet business strategies and objectives.

Course Outcomes

On successful completion, students will be able to

- explain IT governance and compliance both as tools to achieve organizational goals and to satisfy regulatory requirements.
- know the different IT governance frameworks given, in particular the industry standard model COBIT.
- set out the processes and policies for administering and managing IT systems for ensuring compliance with local and international regulatory requirements.
- understand that ensuring compliance with the IT governance framework can be a daunting task that requires constant collection, organization, monitoring, analysis and reporting on event logs to detect and manage control-related activity.
- recognize the IT governance and compliance monitoring tools for ensuring that controls for information systems are effectively implemented, monitored, and maintained.

Contents

1. About IT Governance
   - 1.1 Concept and Definitions
   - 1.2 The Value of IT in the Organization
   - 1.3 Current State and Perceptions
   - 1.4 Governance, Compliance and Risk Management in IT

2. Establishing IT Governance and Compliance
   - 2.1 Assessment
   - 2.2 IT Strategy
   - 2.3 Tactics
   - 2.4 Operations
   - 2.5 Compliance
   - 2.6 Performance

3. The COBIT Framework
   - 3.1 Overview of COBIT
   - 3.2 The COBIT Goals Cascade
   - 3.3 The COBIT Process Reference Model
   - 3.4 Deploying and Implementing COBIT

4. IT Governance Frameworks
   - 4.1 Quality Management as a Foundation
   - 4.2 ISO 9000 Family
   - 4.3 Maturity Models
   - 4.4 Relationship to Service and Architecture Frameworks (ITIL, TOGAF)
   - 4.5 Relationship to IT Security Frameworks (ISO 27000 family)

5. Data Protection and IT Security
   - 5.1 Data Protection
   - 5.2 IT Security Management
   - 5.3 IT Security Threats and Attack Scenarios
   - 5.4 Countermeasures
   - 5.5 Cryptography

Literature

Compulsory Reading

Further Reading

- Calder, A., Watkins, S., & Page, K. (2012). IT governance: An international guide to data security and ISO27001/ISO27002. Philadelphia, PA: Kogan Page Ltd.
- DeLuccia, J. (2008). IT compliance and controls: Best practices for implementation. Hoboken, NJ: John Wiley & Sons.
- ISACA (2012). Cobit 5 [Computer Software].
- Selig, G. (2008). Implementing IT governance: A practical guide to global best practices in IT management. Reading: Van Haren Publishing.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

DLMBITGSM02

IT Service Management

Module Code: DLMBITGSM1

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. André Köhler (IT Service Management)

Contributing Courses to Module

- IT Service Management (DLMBITGSM01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- IT infrastructure library (ITIL)
- ITIL service strategy
- ITIL service design
- ITIL service transition
- ITIL service operation

Learning Outcomes

IT Service Management

On successful completion, students will be able to

- understand IT service management as the enabler of information technology strategies and operations objectives.
- define the touchpoints between IT service management and management information systems.
- differentiate between lightweight and heavyweight approaches to IT service management.
- understand benchmarks and assessments to measure the capability of a service provider and its IT service management competences.
- apply IT services management tools and platforms proactively based on current information technology research and advisory.

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

IT Service Management

Course Code: DLMBITGSM01

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

Course Description

This course focuses on the nature and practice of IT services that keep IT systems running. It introduces students to the knowledge and experience needed to provide IT as a service to organizations, mainly based on the IT Infrastructure Library (ITIL) which is the industry standard for this purpose.

Course Outcomes

On successful completion, students will be able to

- understand IT service management as the enabler of information technology strategies and operations objectives.
- define the touchpoints between IT service management and management information systems.
- differentiate between lightweight and heavyweight approaches to IT service management.
- understand benchmarks and assessments to measure the capability of a service provider and its IT service management competences.
- apply IT services management tools and platforms proactively based on current information technology research and advisory.

Contents

1. Introduction to IT Service Management
   - 1.1 IT Services, Business IT Services
   - 1.2 Service Level Agreement (SLA)
   - 1.3 IT Service Management
   - 1.4 Reference Models for IT Service Management
2. IT Infrastructure Library (ITIL)
   - 2.1 Purpose and content of the IT Infrastructure Library
   - 2.2 Service Live Cycle in ITIL
   - 2.3 Overview on Service Strategy and Operational Processes
   - 2.4 Continual Service Improvement

3. ITIL – Service Strategy
   - 3.1 Business Relationship Management
   - 3.2 Service Portfolio Management
   - 3.3 Financial Management for Services
   - 3.4 Demand Management

4. ITIL – Operational Processes: Service Design
   - 4.1 Service Level Management
   - 4.2 Service Catalogue Management
   - 4.3 Availability Management
   - 4.4 Service Continuity Management

5. ITIL – Operational Processes: Service Transition
   - 5.1 Transition Planning and Support
   - 5.2 Change Management
   - 5.3 Service Asset and Configuration Management
   - 5.4 Release and Deployment Management

6. ITIL – Operational Processes: Service Operation
   - 6.1 Incident Management
   - 6.2 Problem Management
   - 6.3 Request Fulfilment
   - 6.4 Event Management

Literature

Compulsory Reading

Further Reading

- Orand, B. (2011). Foundations of IT service management with ITIL 2011: ITIL foundations course in a book. Create Space Independent Publishing Platform.
- Sturm, R. (2000). Foundations of service level management (1st ed.). Hoboken, NJ: Sams Publishing.
- van Bon, J. (2007). Foundations of ITIL V3. Reading: Van Haren Publishing.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

DLMBITGSM01

Advanced Research Methods

Module Code: DLMARM

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

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

Module Coordinator

Prof. Dr. Josephine Zhou-Brock (Advanced Research Methods)

Contributing Courses to Module

- Advanced Research Methods (DLMARM01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- Social science and research paradigms
- Case study research
- Specific topics of qualitative research
- Advanced issues of qualitative research conceptualization and data analysis
- Underlying assumptions of quantitative research: concepts and consequences
- Evaluation research

Learning Outcomes

Advanced Research Methods

On successful completion, students will be able to

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

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

Advanced Research Methods

Course Code: DLMARM01

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

Course Description

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

Course Outcomes

On successful completion, students will be able to

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

Contents

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

2. Case Study Research
   - 2.1 Types of Case Study Research
   - 2.2 Maintaining Quality in Case Study Research
   - 2.3 Case Study Design
   - 2.4 Implementing Case Studies
   - 2.5 Analyzing Case Studies

3. Specific Topics of Qualitative Research
   - 3.1 Idea Generation
   - 3.2 Critical Incident Technique
   - 3.3 Understanding Communication: Discourse Analysis
   - 3.4 Perceiving Perception: Interpretive Phenomenological Analysis

4. Advanced Issues of Qualitative Research Conceptualizing and Data Analysis
   - 4.1 Measurement Theory
   - 4.2 Index and Scale Construction
   - 4.3 Types of Scale Construction
   - 4.4 The Problem of Nonresponse and Missing Data
   - 4.5 Implications of IT for Research Strategies

5. Underlying Assumptions of Quantitative Research: Concepts and Consequences
   - 5.1 Classical Test Theory
   - 5.2 Probabilistic Test Theory
   - 5.3 Advanced Topics of Test Theory

6. Evaluation Research
   - 6.1 What is Evaluation Research?
   - 6.2 Types of Evaluation Research
   - 6.3 Meta-Analysis
   - 6.4 Meta-Evaluation

Literature

Compulsory Reading

Further Reading

- Babbie, E. R. (2016): The practice of social research. 14th ed., Cengage Learning, Boston, MA.
- Camargo, F. R./Henson, B. (2015): Beyond usability: Designing for consumers' product experience using the Rasch model. In: Journal of Engineering Design, 26(4–6), p. 121–139.
- Olson, L. E. (2014): Articulating a role for program evaluation in responsible conduct of research programs. In: Accountability in Research, 21(1), p. 26–33.
- Tumele, S. (2015): Case study research. In: International Journal of Sales, Retailing and Marketing, 4(9), p. 68–78.
- Tursch, P./Steinberg, F./Woll, R. (2014): A first step towards engineer-oriented adaptation of the Repetory Grid Technique. In: Total Quality Management & Business Excellence, 25(7-8), p. 734–749.
- Zickar, M. J. (2012): A review of recent advances in item response theory. In: Research in Personnel and Human Resources Management, 31, p. 145–176.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

2. Semester

IT Strategy

Module Code: DLMITITS

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. André Köhler (IT Strategy)

Contributing Courses to Module

- IT Strategy (DLMITITS01)

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

- The Role of the IT Strategy for a Company
- Developing an IT Strategy
- Implementing an IT Strategy
- Measuring the Impact of an IT Strategy
- Adapting the IT Strategy
- Specific Aspects of an IT Strategy: Typical Business Demands
- Building Blocks of an IT Strategy

Learning Outcomes

IT Strategy

On successful completion, students will be able to

- analyze the current state of business requirements and IT situations,
- develop an IT strategy and ensure stakeholder engagement,
- align the IT strategy with IT governance, IT service management, IT compliance, business goals and strategy, and human resources,
- measure and control the impact of the strategy,
- develop a sourcing plan and a project portfolio,
- develop goals for application portfolios and the IT infrastructure.

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

IT Strategy

Course Code: DLMITITS01

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

Course Description

An IT strategy is a plan of how to reach defined business and IT goals. It is closely connected to topics such as governance, strategy and management in both business and IT terms. An IT strategy must be developed in accordance with external factors, it must be put into action, results must be measured and the strategy must continuously be adapted to a changing environment and the experiences made. The IT strategy is an important tool in aligning corporate IT to business requirements. Important elements of an IT strategy include the contribution of IT to business value generation, applications, IT infrastructure, project portfolio management and sourcing options.

Course Outcomes

On successful completion, students will be able to

- analyze the current state of business requirements and IT situations,
- develop an IT strategy and ensure stakeholder engagement,
- align the IT strategy with IT governance, IT service management, IT compliance, business goals and strategy, and human resources,
- measure and control the impact of the strategy,
- develop a sourcing plan and a project portfolio,
- develop goals for application portfolios and the IT infrastructure.

Contents

1. The Role of the IT Strategy for a Company
   - 1.1 Elements of IT in a Company: Demands, Organization, Processes, Technology
   - 1.2 What is an IT Strategy?
   - 1.3 IT Strategy in the Context of Governance and Management
   - 1.4 Strategy Lifecycle
2. Developing an IT Strategy
   - 2.1 Business Goals and External Factors
   - 2.2 IT Goals
   - 2.3 Methods for Strategy Development

3. Implementing an IT Strategy
   - 3.1 Communicating a Strategy
   - 3.2 Adapting the Organization and its Processes
   - 3.3 Roadmaps and Portfolio Management
   - 3.4 Leading People & Change Management

4. Measuring the Impact of an IT Strategy
   - 4.1 Why Measurement is Key to Success
   - 4.2 Ways to Measure Strategy Impact
   - 4.3 Evaluation and Reporting of Results

5. Adapting the IT Strategy
   - 5.1 Sources for Change: Feedback, Reviews, Results
   - 5.2 Ways to Improve the Strategy

6. Specific Aspects of an IT Strategy: Typical Business Demands
   - 6.1 Implementing Business Requirements & Business IT Alignment
   - 6.2 Reducing Costs, Increasing Speed and Quality
   - 6.3 Time to Market
   - 6.4 Compliance
   - 6.5 Mergers & Acquisitions

7. Building Blocks of an IT Strategy
   - 7.1 IT Governance, Risk Management and Security
   - 7.2 IT Service Management & Infrastructure
   - 7.3 Application Portfolio Management & Enterprise Architecture Management
   - 7.4 Sourcing & Cloud Strategy
   - 7.5 Human Resources & Leadership

Literature
Compulsory Reading
Further Reading ▪ Ahlemann, F./ Stettiner, E./ Messerschmidt, M./ Legner, C. (2012): Strategic Enterprise Architecture Management. Challenges, Best Practices, and Future Developments. Springer-Verlag, Heidelberg. ▪ Drechsler, A./ Weißschädel, S. (2018): An IT strategy development framework for small and medium enterprises. Information Systems & E-Business Management, 16(1), 93–124. ▪ Hewitt, E. (2018): Technology Strategy Patterns: Architecture as Strategy, O'Reilly UK Ltd., Farnham. ▪ ISACA (2019). COBIT 2019 Framework: Governance and Management Objectives, n.p. ▪ Maholic, J. (2019): IT Strategy: A 3-Dimensional Framework to Plan Your Digital Transformation and Deliver Value to Your Enterprise. N.p.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Artificial Intelligence

Module Code: DLMIMWKI

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
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Ulrich Kerzel (Artificial Intelligence) / Prof. Dr. Ulrich Kerzel (Seminar: AI and Society)

Contributing Courses to Module

- Artificial Intelligence (DLMAIAI01)
- Seminar: AI and Society (DLMAISAIS01)

Module Exam Type

Module Exam	Split Exam
	Artificial Intelligence • Study Format "Distance Learning": Exam, 90 Minutes Seminar: AI and Society • Study Format "Distance Learning": Written Assessment: Research Essay

Weight of Module

see curriculum

Module Contents

Artificial Intelligence

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

Seminar: AI and Society

In this module, students will reflect on current societal and political implications of artificial intelligence. To this end, pertinent topics will be introduced via articles that are then critically evaluated by the students in the form of a written essay.

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.

Seminar: AI and Society

On successful completion, students will be able to

- name selected current societal topics and issues in artificial intelligence.
- explain the influence and impact of artificial intelligence on societal, economic, and polital topics.
- transfer theoretically-acquired knowledge to real-world cases.
- treat in a scientific manner a select topic in the form of a written essay.
- critically question and discuss current societal and political issues arising from the recent advances in artificial intelligence methodology.
- develop own problem-solving skills and processes through reflection on the possible impact of their future occupation in the sector of artificial intelligence.

Links to other Modules within the Study Program	**Links to other Study Programs of IUBH**
This module is similar to other modules in the field of Data Science & Artificial Intelligence.	All Master Programmes in the IT & Technology field.

Artificial Intelligence

Course Code: DLMAIAI01

Study Level	Language of Instruction	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

- Bear, F., Barry, W., & Paradiso, M. (2006). Neuroscience: Exploring the brain (3rd ed.). Baltimore, MD: Lippincott Williams and Wilkins.
- Bratko, I. (2011). Prolog programming for artificial intelligence (4th ed.). Hoboken, NJ: Pearson.
- Jackson, P. (1998). Introduction to expert systems (3rd ed.). Chicago, IL: Addison Wesley Longman.
- Nilsson, N. (2009). The quest for artificial intelligence. Cambridge: Cambridge University Press.
- Russel, S., & Norvig, P. (2009). Artificial intelligence: A modern approach (3rd ed.). Malaysia: Pearson.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Seminar: AI and Society

Course Code: DLMAISAIS01

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

Course Description

In the current decade, impressive advances have been achieved in the field of artificial intelligence. Several cognitive tasks like object recognition in images and video, natural language processing, game strategy, and autonomous driving and robotics are now being performed by machines at unprecedented levels of ability. This course will examine some of societal, economic, and political implications of these developments.

Course Outcomes

On successful completion, students will be able to

- name selected current societal topics and issues in artificial intelligence.
- explain the influence and impact of artificial intelligence on societal, economic, and polital topics.
- transfer theoretically-acquired knowledge to real-world cases.
- treat in a scientific manner a select topic in the form of a written essay.
- critically question and discuss current societal and political issues arising from the recent advances in artificial intelligence methodology.
- develop own problem-solving skills and processes through reflection on the possible impact of their future occupation in the sector of artificial intelligence.

Contents

- The seminar covers current topics concerning the societal impact of artificial intelligence. Each participant must create a seminar paper on a topic assigned to him/her. A current list of topics is given in the Learning Management System.

Literature
Compulsory Reading
Further Reading ▪ Boddington, P. (2017): Towards a code of ethics for artificial intelligence. Springer International Publishing, New York, NY. ▪ Bostrom, N. (2016): Superintelligence: Paths, dangers, strategies. Oxford University Press, Oxford. ▪ Tegmark, M. (2018): Life 3.0: Being human in the age of artificial intelligence. Penguin, New York, NY. ▪ Wachter-Boettcher, S. (2017): Technically wrong: Sexist apps, biased algorithms, and other threats of toxic tech. W. W. Norton & Company, New York, NY.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Seminar

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

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

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

Applied Cyber Security and Data Protection

Module Code: DLMITEACSDP

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ DLMCSITSDP01 or DLMCSITSDS01 ▪ none	MA	10	300 h

Semester / Term	Duration	Regularly offered in	Language of Instruction
see curriculum			English

Module Coordinator

Prof. Dr. Ralf Kneuper (Cyber Security and Data Protection) / Prof. Dr. Ralf Kneuper (Project: Current Challenges of Cyber Security)

Contributing Courses to Module

- Cyber Security and Data Protection (DLMCSITSDP01)
- Project: Current Challenges of Cyber Security (DLMCSEPCCCS01_E)

Module Exam Type

Module Exam	Split Exam
	Cyber Security and Data Protection • Study Format "Distance Learning": Oral Assignment Project: Current Challenges of Cyber Security • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Cyber Security and Data Protection

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

Project: Current Challenges of Cyber Security

Computer Security is constantly evolving. This course brings the student in touch with the state-of-the art security research and practice by applying his/her knowledge to a current problem in this field.

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.

Project: Current Challenges of Cyber Security

On successful completion, students will be able to

- complete a project in the field of computer security that includes a research angle.
- explore computer security beyond the established state of the art.
- write a report highlighting the student's contribution to the interdisciplinary science of computer security.
- contribute to the state-of-the-art in computer security.

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

Cyber Security and Data Protection

Course Code: DLMCSITSDP01

Study Level	Language of Instruction	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.

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 ▪ Bowman, C., Gesher, A., Grant, J., & Slate, D. (2015). The architecture of privacy: On engineering technologies that can deliver trustworthy safeguards. Sebastopol, CA: O'Reilly. ▪ Hintzbergen, J., Hintzbergen, K., Smulders, A., & Baars, H. (2015). Foundations of information security (3rd ed.). Zaltbommel: Van Haren Publishing. ▪ ISO/IEC 29100. (2011). Information technology — Security techniques — Privacy framework. ISO. Retrieved from https://standards.iso.org/ittf/PubliclyAvailableStandards/c045123_ISO_IEC_29100_2011.zip ▪ Paar, C., & Pelzl, J. (2011). Understanding cryptography: A textbook for students and practitioners. Heidelberg: Springer. ▪ The Open Web Application Security Project (OWASP). (2005). A guide to building secure web applications and web services. OWASP. Retrieved from https://www.um.es/atica/documentos/OWASPGuide2.0.1.pdf

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Project: Current Challenges of Cyber Security

Course Code: DLMCSEPCCCS01_E

Study Level	Language of Instruction	Contact Hours	CP	Admission Requirements
MA	English		5	DLMCSITSDP01 or DLMCSITSDS01

Course Description

Computer Security is constantly evolving. In this project, students will have the opportunity to contribute to the interdisciplinary science of computer security by applying their knowledge to a current topic in computer science that requires a comprehensive novel computer security approach. Topics may be the analysis of a particular threat, a report and analysis of a new security technology, the implementation of a security solution or a project specifically using security best practices, etc. In this way, students can demonstrate proficiency of computer security and prepare for the Master's thesis.

Course Outcomes

On successful completion, students will be able to

- complete a project in the field of computer security that includes a research angle.
- explore computer security beyond the established state of the art.
- write a report highlighting the student's contribution to the interdisciplinary science of computer security.
- contribute to the state-of-the-art in computer security.

Contents

- To a given problem and/or a given context, the student will research the subject, develop an appropriate solution and then submit the report and if appropriate any code and specific data. Specific problems and contexts will be provided by the tutor but proposals by the students can be considered.

Literature
Compulsory Reading
Further Reading ▪ Case Studies (Cyber): https://www.securitymagazine.com/topics/2664-case-studies-cyber ▪ Falliere, N. / O Murchu, L. / Chien, E. (2010): W32.Stuxnet Dossier. Symantec, Tempe, AZ. https://www.wired.com/images_blogs/threatlevel/2010/11/w32_stuxnet_dossier.pdf ▪ Hacquebord, F. (2020): Pawn Storm in 2019 A Year of Scanning and Credential Phishing on High-Profile Targets. Trend Micro Research, Irving, TX. https://documents.trendmicro.com/assets/white_papers/wp-pawn-storm-in-2019.pdf ▪ Vulnerability Notes Database: https://www.kb.cert.org/vuls/

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

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

DLMCSEPCCCS01_E

Big Data Applications

Module Code: DLMITEBDA

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Thomas Zöller (Big Data Technologies) / Dr. Hamzeh Alavirad (Data Utilization)

Contributing Courses to Module

- Big Data Technologies (DLMDSBDT01)
- Data Utilization (DLMBBD01)

Module Exam Type

Module Exam	Split Exam
	Big Data Technologies • Study Format "Distance Learning": Oral Assignment Data Utilization • Study Format "Distance Learning": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Big Data Technologies

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

Data Utilization

- Pattern recognition
- Natural language processing
- Image recognition
- Detection and sensing
- Problem-solving
- Decision-making

Learning Outcomes

Big Data Technologies

On successful completion, students will be able to

- identify the different types and sources of data.
- understand different database concepts.
- build new database structures.
- evaluate various data storage frameworks w.r.t. project requirements.
- analyze which data format to use for a given project.
- create a distributed computing environment for a given project.

Data Utilization

On successful completion, students will be able to

- understand how identity, similarity, and diversity of data can be utilized in problem-solving approaches.
- differentiate between complicated and complex systems of investigation.
- identify the variability of a problem under investigation.
- distinguish between invariant and dynamic features of an investigated system.
- synthesize gained insights to propose a reliable data analytics solution.

Links to other Modules within the Study Program	**Links to other Study Programs of IUBH**
This module is similar to other modules in the field of Data Science & Artificial Intelligence	All Master Programmes in the IT & Technology field

Big Data Technologies

Course Code: DLMDSBDT01

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

Course Description

Data are often considered the “new oil”, the raw material from which value is created. To harness the power of data, the data need to be stored and processed on a technical level. This course introduces the four “Vs” of data, as well as typical data sources and types. This course then discusses how data are stored in databases. Particular focus is given to database structures and different types of databases, e.g., relational, noSQL, NewSQL, and time-series.Beyond classical and modern databases, this course covers a wide range of storage frameworks such as distributed filesystems, streaming, and query frameworks. This is complemented by a detailed discussion of data storage formats ranging from classical approaches such as CSV and HDF5 to more modern approaches like Apache Arrow and Parquet.Finally, this course gives an overview of distributed computing environments based on local clusters, cloud computing facilities, and container-based approaches.

Course Outcomes

On successful completion, students will be able to

- identify the different types and sources of data.
- understand different database concepts.
- build new database structures.
- evaluate various data storage frameworks w.r.t. project requirements.
- analyze which data format to use for a given project.
- create a distributed computing environment for a given project.

Contents

1. Data Types and Data Sources
   - 1.1 The 4Vs of data: volume, velocity, variety, veracity
   - 1.2 Data sources
   - 1.3 Data types
2. Databases
   - 2.1 Database structures
   - 2.2 Introduction to SQL
   - 2.3 Relational databases
   - 2.4 nonSQL, NewSQL databases
   - 2.5 Timeseries DB

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

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

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

Literature

Compulsory Reading

Further Reading

- Date, C. J. (2012). Database design and relational theory: Normal forms and all that jazz. Sebastopol, CA: O'Reilly Publishing.
- Karau, H., Konwinski, A., Wendell, A., & Zaharia, M. (2015). Learning spark: Lightning-fast data analysis. Sebastopol, CA: O'Reilly Publishing.
- Narkhede, N., Shapira, G., & Palino, T. (2017). Kafka: The definitive guide: Real-time data and stream processing at scale. Sebastopo, CA: O'Reilly Publishing.
- Poulton, N. (2017). Docker deep dive. Nigel Poulton.
- Psaltis, A. (2017). Streaming data: Understanding the real-time pipeline. Shelter Island, NY: Manning Publications.
- Redmond, E., & Wilson, J. R. (2012). Seven databases in seven weeks: A guide to modern databases and the noSQL movement. Dallas, TX: Pragmatic Bookshelf.
- Sadalage, P., & Fowler, M. (2012). NoSQL distilled: A brief guide to the emerging world of polyglot persistence. Ann Arbor, MI: Addison-Wesley.
- Viescas, J., & Hernandez, M. (2014). SQL queries for mere mortals: A hands-on guide to data manipulation in SQL, (3rd ed.). Ann Arbor, MI: Addison-Wesley.
- White, T. (2015). Hadoop: The definitive guide: Storage and analysis at Internet scale. Sebastopol, CA: O'Reilly Publishing.

Study Format Distance Learning

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

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

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Data Utilization

Course Code: DLMBBD01

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

Course Description

The course Data Utilization introduces case-based applications that take advantage of regularities and patterns found within continuously generated texts, images, or sensor data. The cases solve issues of pattern recognition, natural language processing, image recognition, detection and sensing, problem-solving, and decision support. The cases are related to the application fields of cybersecurity, linguistics, augmented reality, intelligent transportation, problem-solving, and decision support.

Course Outcomes

On successful completion, students will be able to

- understand how identity, similarity, and diversity of data can be utilized in problem-solving approaches.
- differentiate between complicated and complex systems of investigation.
- identify the variability of a problem under investigation.
- distinguish between invariant and dynamic features of an investigated system.
- synthesize gained insights to propose a reliable data analytics solution.

Contents

1. Introduction
   - 1.1 The Meaning of Identity, Similarity, and Diversity
   - 1.2 Data Patterns and Ontologies
2. Pattern Recognition
   - 2.1 Analysis of User Interaction, Attitude, and Behavior
   - 2.2 Predictive Analytics
   - 2.3 Preventing the Unknown: User Behavior Analytics in Cybersecurity
3. Natural Language Processing
   - 3.1 Concepts of Natural Language
   - 3.2 Speech Recognition and Acoustic Modeling
   - 3.3 Discerning the Meaning: Linguistics and Social Media

4. Image Recognition
   - 4.1 Basics of Image Representation
   - 4.2 Integral Transforms and Compression
   - 4.3 Exploiting the Visual: Image Recognition for Augmented Reality

5. Detection and Sensing
   - 5.1 Sensor Construction and Techniques
   - 5.2 Intelligent Agents and Surveillance
   - 5.3 Managing the Complex: Sensor Networks in Intelligent Transportation Systems

6. Problem-solving
   - 6.1 Knowledge Sharing and the Cloud
   - 6.2 Rule-based Systems
   - 6.3 Learning from Nature: Expert Systems in Business

7. Decision Support
   - 7.1 Invariants, Determinants, and Alternatives in Decision-making
   - 7.2 Correlation and Causality in Strategic Decision-making
   - 7.3 Approaching the Crossroads: Dashboards and Visualization

8. Data Security and Data Protection
   - 8.1 Securing Data Storage and Processing Infrastructure Against Unauthorized Access
   - 8.2 Compliance and Regulations, GPDR

Literature
Compulsory Reading
Further Reading ▪ Strong, C. (2015). Humanizing big data: Marketing at the meeting of data, social science and consumer insight. London: Kogan Page. ▪ Wheeler, S. R. (2016). Architecting experience: A marketing science and digital analytics handbook. Singapore: World Scientific Publishing. ▪ Farzindar, A., Inkpen, D., & Hirst, G. (2017). Natural language processing for social media (2nd ed.). San Rafael, CA: Morgan & Claypool Publishers. ▪ Bajcsy, P., Chalfoun, J., & Simon, M. (2017). Web microanalysis of big image data. Berlin: Springer. ▪ Hsu, H., Chang, C., & Hsu, C. (Eds.). (2017). Big data analytics for sensor-network collected intelligence. Cambridge, MA: Academic Press. ▪ Delen, D. (2015). Real-world data mining: Applied business analytics and decision making. New York, NY: Person. ▪ Pearl, J., & Mackenzie, D. (2018). The book of why: The new science of cause and effect. New York, NY: Basic Books.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Blockchain and Quantum Computing

Module Code: DLMCSEBCQC

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
see curriculum	Minimaldauer: 1 Semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Rald Kneuper (Blockchain) / Dr. Carsten Blank (Quantum Computing)

Contributing Courses to Module

- Blockchain (DLMCSEBCQC01)
- Quantum Computing (DLMCSEBCQC02)

Module Exam Type

Module Exam	Split Exam
	Blockchain • Study Format "Distance Learning": Written Assessment: Written Assignment Quantum Computing • Study Format "Distance Learning": Oral Assignment

Weight of Module

see curriculum

Module Contents

Blockchain

- Basic concepts of blockchain and related technologies
- Applications of blockchain and DLT
- Security
- Development of blockchain and DLT applications
- Social and legal aspects

Quantum Computing

- Physics of quantum computing
- Quantum computing models
- Quantum algorithms
- Quantum computing with the IBM framework Qiskit
- Applications, potential for and challenges of quantum computing

Learning Outcomes

Blockchain

On successful completion, students will be able to

- outline the functions provided by and the technology used in blockchains.
- explain important applications of block chains, in particular BitCoin.
- demonstrate the technical architecture of blockchain applications.
- appraise the benefits and challenges of suggested blockchain applications.
- discuss the social and legal aspects of blockchain technology.

Quantum Computing

On successful completion, students will be able to

- outline the basic concepts of quantum mechanics as they relate to quantum computing.
- describe the computation models used in quantum computing.
- demonstrate the role of quantum computing for cryptography and other application areas.
- compare the theoretical and practical potential of quantum computing to classical computing.
- apply the concepts of quantum computing to develop simple programs within the Qiskit framework.

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

Blockchain

Course Code: DLMCSEBCQC01

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

Course Description

Started by the cryptocurrency BitCoin, blockchain and related topics such as distributed ledger technologies and smart contracts have become increasingly important over the last few years and are claimed to be a major disruptive technologies. As BitCoin shows, systems that today need a trustworthy central coordinating body may become genuinely distributed systems without the need for such a body in the future. While blockchain has the potential for completely new types of applications, these suggested applications do not always make use of the strengths of the technology; rather, they simply provide a different approach to solving problems that could be solved more easily and efficiently using standard technologies such as database systems. Furthermore, blockchain applications have led to new social challenges and legal questions, such as the legal status of “smart contracts”. Different infrastructures such as Ethereum and Hyperledger have been developed to form the basis for blockchain applications. The goal of this course is to provide an understanding of the technical, as well as social and legal, aspects of blockchain and related technologies.

Course Outcomes

On successful completion, students will be able to

- outline the functions provided by and the technology used in blockchains.
- explain important applications of block chains, in particular BitCoin.
- demonstrate the technical architecture of blockchain applications.
- appraise the benefits and challenges of suggested blockchain applications.
- discuss the social and legal aspects of blockchain technology.

Contents

1. Basic Concepts
   - 1.1 The Functional View: Distributed Ledger Technologies
   - 1.2 The Technical View: Blockchain
   - 1.3 History of Blockchain and DLT
   - 1.4 Consense Mechanisms

2. BitCoin
   - 2.1 The BitCoin Payment System
   - 2.2 The Technology Behind BitCoin
   - 2.3 Security of BitCoin
   - 2.4 Scalability and Other Limitations of BitCoin
   - 2.5 BitCoin Derivatives and Alternatives

3. Smart Contracts and Decentralized Apps
   - 3.1 Smart Contracts
   - 3.2 Decentralized Apps (DApps)
   - 3.3 Ethereum
   - 3.4 Hyperledger
   - 3.5 Alternative Platforms for Smart Contracts and DApps

4. Security of Block Chain and DLT
   - 4.1 Cryptology Used
   - 4.2 Attacks on Blockchain and DLT
   - 4.3 Resolving Bugs and Security Holes
   - 4.4 Long-Term Security

5. Block Chain and DLT Application Scenarios
   - 5.1 Benefits and Limits of Applying Blockchain and DLT
   - 5.2 Registers for Land and Other Property
   - 5.3 Applications in the Supply Chain
   - 5.4 Applications in Insurance
   - 5.5 Initial Coin Offerings for Sourcing Capital
   - 5.6 Examples of Further Applications

6. Development of Blockchain and DLT Applications
   - 6.1 Architecture of Blockchain and DLT Applications
   - 6.2 Platform Selection
   - 6.3 Design of Blockchain and DLT Applications

7. Blockchain and Society
   - 7.1 (Mis-)Trust in Institutions
   - 7.2 Blockchain and the Environment
   - 7.3 Cyber-Currencies in the Darknet
   - 7.4 ICO Fraud

8. Legal Aspects
   - 8.1 DLT and Smart Contracts as Legal Contracts
   - 8.2 Cryptocurrencies as Legal Currencies
   - 8.3 Regulation of ICOs
   - 8.4 Data Protection / Privacy in Blockchains

Literature

Compulsory Reading

Further Reading

- De Filippi, P., & Wright, A. (2018). Blockchain and the law. The rule of code. Cambridge, MA: Harvard University Press.
- Meinel, C., Gayvoronskaya, T. & Schnjakin, M. (2018). Blockchain. Hype or innovation. Potsdam: Universitätsverlag Potsdam.
- Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system [white paper]. Retrieved from https://bitcoin.org/bitcoin.pdf
- Tapscott, D., & Tapscott, N. (2018). Blockchain revolution. How the technology behind bitcoin is changing money, business, and the world. New York, NY: Portfolio/Penguin.
- Xu, W., Weber, I., & Staples, M. (2019). Architecture for blockchain applications. Cham: Springer.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Quantum Computing

Course Code: DLMCSEBCQC02

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

Course Description

Quantum computing is a completely new paradigm for the architecture of computers. It currently is in the early stage of development but has the potential to speed up certain kinds of computations, not just by orders of magnitude but by moving them from exponential to linear growth. One of the issues that will be affected is the prime factorization of large numbers which currently forms the basis for important cryptographic algorithms, in particular the RSA algorithm which would in that case would no longer be secure. This course gives an introduction to the physics behind quantum computing and the computation models used. Students are familiarized with the most important algorithms for quantum computing and write a few programs for quantum computers. The application potential and challenges of quantum computing are also discussed.

Course Outcomes

On successful completion, students will be able to

- outline the basic concepts of quantum mechanics as they relate to quantum computing.
- describe the computation models used in quantum computing.
- demonstrate the role of quantum computing for cryptography and other application areas.
- compare the theoretical and practical potential of quantum computing to classical computing.
- apply the concepts of quantum computing to develop simple programs within the Qiskit framework.

Contents

1. Basic concepts
   - 1.1 Quantum physics as a basis for computing
   - 1.2 Types of quantum computers
   - 1.3 Qbits
   - 1.4 Linear algebra

2. The physics of quantum computers
   - 2.1 Basic concepts of quantum mechanics
   - 2.2 Spin and entanglement
   - 2.3 Architecture of quantum computers
   - 2.4 Noise and error correction
   - 2.5 Current state and outlook

3. Quantum computing models
   - 3.1 Quantum gates and circuits
   - 3.2 Single qubit quantum systems
   - 3.3 Multiple qubit quantum systems

4. Quantum algorithms
   - 4.1 Computability and complexity in quantum computing
   - 4.2 Quantum Fourier transform
   - 4.3 The Shor algorithm
   - 4.4 The Grover algorithm

5. Quantum computing with the IBM framework Qiskit
   - 5.1 Overview of Qiskit and the IBM Q Provider
   - 5.2 Quantum circuits in Qiskit
   - 5.3 First steps in programming with Qiskit

6. Applications, potential and challenges of quantum computing
   - 6.1 Applications of quantum computing
   - 6.2 Quantum cryptography and post-quantum cryptography
   - 6.3 Quantum supremacy

Literature
Compulsory Reading
Further Reading ▪ Bernhardt, C. (2019): Quantum computing for everyone. MIT Press, Cambridge, MA. ▪ Faro, I. (2017): A developer's guide to using the Quantum QISKit SDK. Retrieved from https://developer.ibm.com/code/2017/05/17/developers-guide-to-quantum-qiskit-sdk/ ▪ Rieffel, E. G. (2014): Quantum computing. A gentle introduction. MIT Press, Cambridge, MA. ▪ Susskind, L. / Friedman, A. (2015): Quantum mechanics. The theoretical minimum. Penguin, London. ▪ Zygelman, B. (2018): A first introduction to quantum computing and information. Springer, Cham.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Change Management in Organizations

Module Code: DLMITECMO

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Dr. Eike Christiane Fismer (Tools in Organizational Analysis) / Prof. Dr. René Schmidpeter (Change Management)

Contributing Courses to Module

- Tools in Organizational Analysis (DLMWPWOAE01_E)
- Change Management (DLMBCM01)

Module Exam Type

Module Exam	Split Exam
	Tools in Organizational Analysis • Study Format "Fernstudium": Exam, 90 Minutes Change Management • Study Format "Distance Learning": Written Assessment: Case Study

Weight of Module

see curriculum

Module Contents

Tools in Organizational Analysis

- The Organization
- Organizational Research
- Organization Diagnostics
- Organization Analysis
- Practical application in specific areas

Change Management

- The context and meaning of change
- The change process
- Perspectives for understanding change
- Implementing change

Learning Outcomes

Tools in Organizational Analysis

On successful completion, students will be able to

- deal with the concept of organization in a differentiated way.
- evaluate the possibilities of organizational diagnostics.
- use selected instruments of organizational and team diagnosis.
- carry out, evaluate and reflect on organizational diagnostic measures.
- work on specific organizational analyses.

Change Management

On successful completion, students will be able to

- recognize common features of organizational change and anticipate some of the standard difficulties encountered when an organization engages in change processes.
- explain the importance of organizational change.
- develop a conceptual framework for planned and improvised organizational change, and differentiate between anticipated, emergent, and opportunity-based change.
- utilize and redesign formal organizational structures to facilitate change processes.
- recognize the role of informal organizational structures and identify key stakeholders to promote change processes.
- analyze the social networks that exist within an organization, map independencies and motives/interests, and plan how to distribute information and redesign work flows.
- differentiate between groups of stakeholders and identify the most suitable strategy to adopt with each group.
- recognize the role of the change leader as a political broker and build social capital through informal methods.
- utilize stories and symbols when communicating with others in an organization to maximize leverage as a cultural change leader.
- draw on empirical evidence to plan and implement change processes in an organization.

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

Tools in Organizational Analysis

Course Code: DLMWPWOAE01_E

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

Course Description

Organizations are more than ever like living organisms, which due to external changes must also change internally and adapt to new conditions. This course deals with a differentiated view of entrepreneurially oriented organizations, their goals, possible strategies, their function and performance. It sheds light on the possibilities of organizational research and its fields of research, in order to then address the goals, possibilities and fields of application of the diagnosis of organizations. Various methods and instruments of organizational diagnosis are presented with the aim of using them in the organizational analysis process. This enables students to initiate and implement change measures on the basis of diagnostic instruments and to evaluate such measures. The course also deals with the practical application of topics that arise in everyday business life, such as the analysis of change management processes, of careers and in connection with risk assessment in the acquisition of companies or company investments (due diligence). In this way, students are taught the spectrum and possible applications of the measures and methods of a targeted organizational analysis through diagnostic measures.

Course Outcomes

On successful completion, students will be able to

- deal with the concept of organization in a differentiated way.
- evaluate the possibilities of organizational diagnostics.
- use selected instruments of organizational and team diagnosis.
- carry out, evaluate and reflect on organizational diagnostic measures.
- work on specific organizational analyses.

Contents

1. The Organization
   - 1.1 The concept of organization
   - 1.2 Goals and strategies of an organization
   - 1.3 Function and performance of organizations
   - 1.4 Role of people in organizations
   - 1.5 Differences between organizations

2. Organizational Research
   - 2.1 Perspectives of organizational research
   - 2.2 Fields of research
   - 2.3 Empirical research on organizations

3. Organization Diagnostics
   - 3.1 Definition and goals of organizational diagnostics
   - 3.2 Fields of application of surgical diagnostics
   - 3.3 The Organizational Diagnosis as a Management Tool
   - 3.4 Target groups of organizational diagnostic findings
   - 3.5 Selected instruments of team and organization diagnosis

4. Organization Analysis
   - 4.1 The organizational analysis
   - 4.2 Preliminary considerations and analysis process
   - 4.3 Conception and operationalization
   - 4.4 Data collection methods
   - 4.5 Survey and evaluation
   - 4.6 Presentation of the analysis and reflection

5. Practical application in specific areas
   - 5.1 Analysis of change processes
   - 5.2 Network analysis
   - 5.3 Analysis of careers in organizations
   - 5.4 Organizational Analysis and Due Diligence

Literature

Compulsory Reading

Further Reading

- Balzac, S. R. (2014): Organizational Psychology for Managers. Springer, New York, NY.
- Knights, D. / Willmott, H. (2010): Organizational Analysis: Essential Readings. South-Western Cengage Learning, San Francisco, CA.
- Lauer, T. (2021): Change Management. Fundamentals and Success Factors. Springer, Berlin.

Study Format Fernstudium

Study Format	Course Type
Fernstudium	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Change Management

Course Code: DLMBCM01

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

Course Description

We live in a world characterized by constant change. This affects not only individuals but also organizations. Even successful organizations need to constantly reinvent themselves in order to remain successful. This course presents a discussion of change in relation to the complexities of organizational life, with an emphasis on applying theory to actual practice. Organizational change is an international phenomenon and the course includes many international case examples. With a focus on organizational change as opposed to personal change and/or entrepreneurship, this course has a distinctly different focus from the related modules “Leadership” and “Innovation and Entrepreneurship.” The first part of the course considers the nature of change and different change models. The second part focuses on how different perspectives complement one another and can be used to better understand, analyze, and diagnose change processes. The course deals with issues of structure, culture, and politics. In the later part of the course, the implementation of change is considered in detail. Given that many change processes fail, this part is an important learning component to complement an in-depth understanding of change.

Course Outcomes

On successful completion, students will be able to

- recognize common features of organizational change and anticipate some of the standard difficulties encountered when an organization engages in change processes.
- explain the importance of organizational change.
- develop a conceptual framework for planned and improvised organizational change, and differentiate between anticipated, emergent, and opportunity-based change.
- utilize and redesign formal organizational structures to facilitate change processes.
- recognize the role of informal organizational structures and identify key stakeholders to promote change processes.
- analyze the social networks that exist within an organization, map independencies and motives/interests, and plan how to distribute information and redesign work flows.
- differentiate between groups of stakeholders and identify the most suitable strategy to adopt with each group.
- recognize the role of the change leader as a political broker and build social capital through informal methods.
- utilize stories and symbols when communicating with others in an organization to maximize leverage as a cultural change leader.
- draw on empirical evidence to plan and implement change processes in an organization.

Contents

Literature
Compulsory Reading
Further Reading ▪ Burnes, B. (2009). Managing change (5th ed.). Upper Saddle River, NJ: Financial Times Press. ▪ Carnall, C. (2007). Managing change in organizations (5th ed.) Upper Saddle River, NJ: Financial Times Press. ▪ Grieves, J. (2010). Organizational change: Themes and issues Oxford: Oxford University Press. ▪ Hall, G. E., & Hord, S. M. (2011). Implementing change: Patterns, principles, and potholes (3rd ed.). Boston, MA: Allyn & Bacon. ▪ Myers, P., Hulks, S., & Wiggins, L. (2012). Organizational change: Perspectives on theory and practice. Oxford: Oxford University Press. ▪ Senior, B., & Swailes, S. (2010). Organizational change (4th ed.). Upper Saddle River, NJ: Financial Times Press. ▪ Tushmann, M. L., & O'Reilly, C. A. (2002). Winning through innovation: A practical guide to leading organizational change and renewal Cambridge, MA: Harvard Business School Press.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Case Study

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Written Assessment: Case Study

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Cloud Computing

Module Code: DLMWIWCC_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ DLMWIWCC01_E ▪ none	MA	10	300 h

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

Module Coordinator

Prof. Dr. Tobias Brückmann (Introduction to Cloud Computing and Serverless Computing) / Prof. Dr. Tobias Brückmann (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 IUBH**
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	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 ▪ Bahga, A.; Madisetti, V. (2019): Cloud Computing Solutions Architect: A Hands-On Approach; VPT ▪ Chang, V./Walters, R.J./Wills, G. (2015): Delivery and Adoption of Cloud Computing Services in Contemporary Organizations. IGI Global, Hershey PA. ▪ Erl, T.; Cope, R.; Naserpour, A. (2015): Cloud Computing Design Patterns, Prentice Hall ▪ Kavis, M.J. (2014): Architecting the Cloud: Design Decisions for Cloud Computing Service Models, Wiley ▪ Longbottom, C. (2017): Evolution of Cloud Computing – How to Plan for Change. BCS The Chartered Institute for IT, Swindon UK. ▪ Lynn, T.; Mooney, J.G.; van dre Werff, L.; Fox, G. (2021): Data Privacy and Trust in Cloud Computing, Palgrave Macmillan, Cham ▪ Patnaik, S.; Yang, Y.; Tavana, M.; Popentiu-Vlădicescu, F.; Qiao, F. (2019) Digital Business, Springer, Cham ▪ Ramachandran, M. (2016): Software security requirements management as an emerging cloud computing service. In: International Journal of Information Management, 36 (4), S. 580–590. ▪ Surianarayanan, C.; Chelliah P.R. (2019): Essentials of Cloud Computing, Springer, Cham ▪ Vacca, J. R. (2017): Cloud computing security: foundations and challenges. CRC Press, Boca Raton.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Project: Cloud Computing

Course Code: DLMWIWCC02_E

Study Level	Language of Instruction	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-Dokumentation. (URL: https://docs.aws.amazon.com/index.html [letzter Zugriff: 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. (Hrsg.): 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. (Hrsg.): 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	**BOLK:** no **Course Evaluation:** no
Type of Exam	Written Assessment: Project Report

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

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

DLMWIWCC02_E

Communication and Negotiation

Module Code: DLMITECN

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Heike Schiebeck (Interview and Communication Techniques) / Prof. Dr. Georg Berkel (Negotiation)

Contributing Courses to Module

- Interview and Communication Techniques (DLMWPGUK01_E)
- Negotiation (DLMNEGE01-01)

Module Exam Type	
Module Exam	**Split Exam** Interview and Communication Techniques • Study Format "Distance Learning": Oral Assignment Negotiation • Study Format "Distance Learning": Oral Assignment
Weight of Module see curriculum	

Module Contents

Interview and Communication Techniques

- Forms of Communication
- Means of Communication Techniques of Communication
- Communication with Specific Groups Conversation Management
- Means in Conversation
- Dealing with Difficult Conversation Situations

Negotiation

- The significance and nature of negotiation
- The distribution of value
- Distributive negotiation tactics
- The creation of value
- Value creation negotiation tactics
- The negotiator's dilemma
- Learning to negotiate

Learning Outcomes

Interview and Communication Techniques

On successful completion, students will be able to

- place the importance of the areas of communication techniques and interviewing in the overall context of business psychology,
- identify goals and forms of communication and interviewing in the context of business psychology,
- use and apply means, methods and instruments of communication and conversation in the context of business psychology,
- identify and understand purposeful communication and conversation management techniques against the backdrop of difficult and deadlocked situations,
- explain and develop appropriate measures of communication and conversation,
- discuss and uncover problems of communication and conversation and suggest alternative approaches.

Negotiation

On successful completion, students will be able to

- Describe the process of negotiation and the interconnected but opposing processes of value distribution and value creation.
- Recognize common myths and misconceptions regarding negotiation and negotiators and take measures to avoid common pitfalls.
- Apply empirical insights about the process of negotiation to negotiation scenarios.
- Negotiate with various other parties using value distribution and value creation tactics.
- Engage in a process of self-reflection and utilize a variety of tools to improve performance as a novice negotiator.

Links to other Modules within the Study Program	**Links to other Study Programs of IUBH**
This module is similar to other modules in the fields of Social Work and Business Administration & Management	All Master Programmes in the Social Sciences and Business & Management fields

Interview and Communication Techniques

Course Code: DLMWPGUK01_E

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

Course Description

Good communication skills are the key to professional success. To achieve professional goals, you have to be convincing in conversations. Only those who really understand their conversation partners and are also understood by them, will achieve a good result more quickly. To achieve this, it is essential to be prepared, especially for difficult conversations, and to have a toolbox of different conversation techniques at your disposal, so that can be used in a targeted manner to make constructive communication possible. In addition to certain means of communication, this also requires special techniques and methods. Knowledge and understanding of the psychological and human aspects of the use of communication techniques and the conduct of discussions are an important basis for the success of discussions in the context of business psychology. The course also addresses difficult and critical discussion situations as well as communication with specific target groups. Students learn about different communication styles, communication techniques as well as the phases of conducting discussions in order to specifically prepare for and conduct discussions with other team members as well as external partners. You will learn how to better adapt to your conversation partners and act accordingly in order to achieve good results for both sides.

Course Outcomes

On successful completion, students will be able to

- place the importance of the areas of communication techniques and interviewing in the overall context of business psychology,
- identify goals and forms of communication and interviewing in the context of business psychology,
- use and apply means, methods and instruments of communication and conversation in the context of business psychology,
- identify and understand purposeful communication and conversation management techniques against the backdrop of difficult and deadlocked situations,
- explain and develop appropriate measures of communication and conversation,
- discuss and uncover problems of communication and conversation and suggest alternative approaches.

Contents

6. Special Features of the Conversation
   - 6.1 Shaping the Relationship Level
   - 6.2 Conversation Traps and Conversation Disorders
   - 6.3 Recognize and Master Critical Conversation Situations
   - 6.4 Feedback Rules

7. Dealing with Difficult Conversation Situations
   - 7.1 Acting in Deadlocked Situations
   - 7.2 Dealing with Resistance
   - 7.3 Personal Aspects in Conversations

Literature

Compulsory Reading

Further Reading

- Burgoon, J. K./ Bacue, A. E. (2003): Nonverbal communication skills. In: J. O. Greene / B. R. Burleson (Eds.): Handbook of communication and social interaction skills (p. 179–219). Lawrence Erlbaum Associates Publishers.
- Dobkin, B. A. / Pace, R. C. (2003): Communication in a changing world. McGraw-Hill, New York.
- Jacobson, S. K. (2009): Communication Skills for Conservation Professionals. 2nd ed., Island Press, Washington.
- Patterson, K./ Grenny, J./ McMillan, R. / Switzler, A. (2011): Crucial Conversations Tools for Talking When Stakes Are High. Second Edition Paperback, McGraw-Hill, New York.
- Tuhovsky, I. / Streu, R. (2020): Effective Communication Skills Mastery Bible, Independently Published.
- Young, A. M. (2014): Prophets, Gurus, and Pundits - Rhetorical Styles and Public Engagement. Southern Illinois University Press, Carbondale.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Negotiation

Course Code: DLMNEGE01-01

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

Course Description

The course enables students to learn about both the negotiation process and actually how to negotiate. In order to understand the rules that govern the interpersonal decision-making process that is negotiation, it is essential to have an in-depth understanding of the two sides of negotiation: the distribution of value and the creation of value. This course begins by introducing students to the pervasive nature of negotiation and some of the common myths and misconceptions that limit the potential benefits that can be gained through effective negotiation. It then delves into the concept of distribution value and the specific tactics that can be employed in order to arrive at the most favorable outcome. Students will then explore value creation and how to implement tactics to move from a win-lose scenario to a win-win. The course will then offer insights drawn from game theory (including the prisoner's dilemma, the "stag hunt game," the "tit-for-tat" strategy) before concluding with a focused exploration of how to manage the process of implementing negotiation theory in practice, avoiding pitfalls and allowing for effective negotiation learning.

Course Outcomes

On successful completion, students will be able to

- Describe the process of negotiation and the interconnected but opposing processes of value distribution and value creation.
- Recognize common myths and misconceptions regarding negotiation and negotiators and take measures to avoid common pitfalls.
- Apply empirical insights about the process of negotiation to negotiation scenarios.
- Negotiate with various other parties using value distribution and value creation tactics.
- Engage in a process of self-reflection and utilize a variety of tools to improve performance as a novice negotiator.

Contents

1. The Significance and Nature of Negotiation
   - 1.1 The Nature and Types of Negotiation
   - 1.2 Misconceptions About Negotiation and Myths About Negotiators
2. The Distribution of Value
   - 2.1 The Pie: Zone of Possible Agreement
   - 2.2 Slicing the Pie: Maximizing Distributive Outcomes

Literature

Compulsory Reading

Further Reading

- Bazerman, M. H., & Neale, M. A. (1993). Negotiating rationally. New York: The Free Press.
- Berkel, G. (2013). Contract management. In M. Kleinaltenkamp, W. Plinke, & I. Geiger (Eds.), Business project management and marketing: Mastering business markets. Heidelberg: Springer.
- Brett, J. M. (2014). Negotiating globally: How to negotiate deals, resolve dispute, and make decisions across cultural boundaries. San Francisco: Jossey-Bass.
- De Cremer, D., & Pillutla, M. (2013). Making negotiations predictable: What science tells us. Basingstoke: Palgrave Macmillan.
- Der Foo, M., Anger Elfenbein, H., Hoon Tan, H., & Chuan Aik, V. (2004). Emotional intelligence and negotiation: The tension between creating and claiming value. International Journal of Conflict Management, 15 (4), 411–429.
- Diekmann, K., & Galinsky, A. D. (2006). Overconfident, underprepared: Why you may not be ready to negotiate. Negotiation, 9 (10), 6–9.
- Dunning, D., Johnson, K., Ehrlinger, J., & Kruger, J. (2003). Why people fail to recognize their own incompetence. Current Directions in Psychological Science, 12 (3), 83–87.
- Fisher, R., Ury, W. L., & Patton, B. (2011). Getting to yes: Negotiating agreement without giving in (3rd ed.). London: Penguin Books.
- Galinsky, A. D., & Mussweiler, T. (2001). First offers as anchors: The role of perspective- taking and negotiator focus. Journal of Personality & Social Psychology, 81 (4), 657–669.
- Gigerenzer, G. (2005). I think, therefore I err. Social Research, 72 (1), 195–218.
- Kahneman, D. (2011). Thinking, fast and slow. London: Penguin Books.
- Katz, G. (2011). Intercultural negotiations: The unique case of Germany and Israel. Berlin: Books on Demand.
- Lax, D. A., & Sebenius, J. K. (1986). The manager as negotiator: Bargaining for cooperation and competitive gain. New York, NY: Free Press.
- Liberman, V., Samuels, S. M., & Ross, L. (2004). The name of the game: Predictive power of reputations versus situational labels in determining prisoner's dilemma game moves. Personality and Social Psychology Bulletin, 30

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Oral Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

DLMNEGE01-01

Cyber Criminality

Module Code: DLMIMWCK_E

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ none ▪ DLMIMWCK01_E	MA	10	300 h

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

Module Coordinator

Prof. Dr. Alexander Lawall (Attack Scenarios and Incident Response) / Prof. Dr. Alexander Lawall (Project: Cyber Forensics)

Contributing Courses to Module

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

Module Exam Type

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

Weight of Module

see curriculum

Module Contents

Attack Scenarios and Incident Response

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

Project: Cyber Forensics

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

Learning Outcomes

Attack Scenarios and Incident Response

On successful completion, students will be able to

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

Project: Cyber Forensics

On successful completion, students will be able to

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

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

Attack Scenarios and Incident Response

Course Code: DLMIMWCK01_E

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

Course Description

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

Course Outcomes

On successful completion, students will be able to

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

Contents

1. Introduction
   - 1.1 Computer crime as distinct from other offences
   - 1.2 Vulnerabilities in computers and mobile devices
   - 1.3 An overview of malware
   - 1.4 Social engineering and the human factor

2. Criminal basis
   - 2.1 Identity abuse
   - 2.2 Theft of intellectual property
   - 2.3 Falsification of evidentiary data
   - 2.4 Computer fraud

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

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

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

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

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

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

Literature

Compulsory Reading

Further Reading

- Fleischer, D. (2016): Wirtschaftsspionage. Springer Fachmedien, Wiesbaden.
- Klipper, S. (2015): Cyber Security. Ein Einblick für Wirtschaftswissenschaftler. Springer, Berlin.
- Kraft, P./Weyert, A. (2017): Network Hacking. Professionelle Angriffs-und Verteidigungstechniken gegen Hacker und Datendiebe. Franzis Verlag, München.
- Labudde, D./Spranger, M. (Hrsg.) (2017): Forensik in der digitalen Welt. Moderne Methoden der forensischen Fallarbeit in der digitalen und digitalisierten realen Welt. Springer, Berlin.
- Lenhard, T. H. (2017): Datensicherheit. Technische und organisatorische Schutzmassnahmen gegen Datenverlust und Computerkriminalität. Springer, Berlin.
- Lewis, J./Baker, S. (2013): The economic impact of cybercrime and cyber espionage. McAfee, Santa Clara, CA.
- Müller, K. R. (2018): IT-Sicherheit mit System. Integratives IT-Sicherheits-, Kontinuitäts-und Risikomanagement–Sichere Anwendungen–Standards und Practices. Springer, München.
- Yar, M./Steinmetz, K. F. (2019): Cybercrime and society. SAGE Publications, Thousand Oaks, CA.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Project: Cyber Forensics

Course Code: DLMIMWCK02_E

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

Course Description

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

Course Outcomes

On successful completion, students will be able to

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

Contents

- The project aims to develop an action plan for conducting a digital investigation and incident management for a given threat scenario. Beginning with the concrete suspicion of a computer crime*, the students develop a plan of action that covers the following measures:
  - Localization of the affected systems (hardware and software)
  - Identification of the affected business processes
  - Risk assessment for the impact on affected business processes
  - Communication with internal departments, cooperation partners, customers and the public
  - Identification and preservation of relevant data
  - Examination of the data
  - Securing electronic evidence and its usability in court
  - Recommendations for prevention
  - The action plan should be written in such a way that it serves as a process template for continuous incident handling.
- *Examples of suspicious cases are a suspected server attack, loss of customer data, manipulation of business data, publication of internal company data, suspicion of product piracy, inconsistency of electronic signatures in company documents, digital blackmailing of a decision maker or suspicion of industrial espionage.

Literature
Compulsory Reading
Further Reading ▪ Aebi, D. (2013): Praxishandbuch Sicherer IT-Betrieb. Risiken erkennen, Schwachstellen beseitigen, IT-Infrastrukturen schützen. Springer, Berlin. ▪ Banaschik, M. (2011): Internationale E-Discovery und Information Governance. Praxislösungen für Juristen, Unternehmer und IT-Manager. Erich Schmidt Verlag, Berlin. ▪ Geschonneck, A. (2014): Computer-Forensik. Computerstraftaten erkennen, ermitteln, aufklären. dpunkt.verlag, Heidelberg. ▪ Hamid, J./Gianluigi, M./Lilburn, W. D. (2010): Handbook of electronic security and digital forensics. World Scientific Publishing, Singapur. ▪ Labudde, D./Spranger, M. (Hrsg.) (2017): Forensik in der digitalen Welt. Moderne Methoden der forensischen Fallarbeit in der digitalen und digitalisierten realen Welt. Springer, Berlin. ▪ Meier, S. (2017): Digitale Forensik in Unternehmen (Doktorarbeit). Universität Regensburg, Regensburg.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

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

DLMIMWCK02_E

Data Science and Analytics

Module Code: DLMBDSA

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Ulrich Kerzel (Data Science) / Prof. Dr. Ulrich Kerzel (Analytical Software and Frameworks)

Contributing Courses to Module

- Data Science (DLMBDSA01)
- Analytical Software and Frameworks (DLMBDSA02)

Module Exam Type

Module Exam	Split Exam
	Data Science • Study Format "Distance Learning": Exam, 90 Minutes Analytical Software and Frameworks • Study Format "Distance Learning": Written Assessment: Written Assignment

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

Analytical Software and Frameworks

- Introduction to analytical software and frameworks
- Data storage
- Statistical modeling
- Machine learning
- Cloud computing platforms
- Distributed computing
- Database technologies

Learning Outcomes

Data Science

On successful completion, students will be able to

- identify use cases and evaluate the performance of data-driven approaches
- 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.

Analytical Software and Frameworks

On successful completion, students will be able to

- comprehend how cloud computing and distributed computing support the field of data analytics.
- understand in-memory database technologies for real-time analytics.
- apply advanced statistics and machine learning solutions to solve data analysis problems.
- compare the capabilities and limitations of the presented software solutions.

Links to other Modules within the Study Program	**Links to other Study Programs of IUBH**
This module is similar to other modules in the field(s) of Data Science & Artificial Intelligence	All Master Programmes in the IT & Technology field(s)

Data Science

Course Code: DLMBDSA01

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

Course Description

The course Data Science 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. 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
- comprehend how data are pre-processed in preparation for analysis.
- develop typologies for data and ontologies for knowledge representation.
- decide for appropriate mathematical algorithms to utilize data analysis for a given task.
- understand the value, applicability, and limitations of artificial intelligence for data analysis.

Contents

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

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

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

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

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

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

Literature
Compulsory Reading
Further Reading ▪ Agrawal, A. (2018). Prediction machines: The simple economics of artificial intelligence. Brighton, MA: Harvard Business Review. ▪ Hu, F. (2016). Big data: storage, sharing, and security. Boca Raton, FL: Auerbach Publications. ▪ Ciaburro, G., & Venkateswaran, B. (2017). Neural networks with R: Smart models using CNN, RNN, deep learning, and artificial intelligence principles. Birmingham: Packt Publishing. ▪ Kepner, J., & Jananthan, H. (2018). Mathematics of big data: Spreadsheets, databases, matrices, and graphs. Cambridge, MA: MIT Press. ▪ Russell, S. J., & Norvig, P. (2015). Artificial intelligence: A modern approach. New York, NY: Pearson Education. ▪ Géron, A. (2017). Hands-on machine learning with Scikit-Learn and TensorFlow. Sebastopol, CA: O'Reilly Media, Inc.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Analytical Software and Frameworks

Course Code: DLMBDSA02

Study Level	Language of Instruction	Contact Hours	CP	Admission Requirements
MA	English		5	DLMBDSA01

Course Description

Analytical Software and Frameworks provides insight into contemporary software and platforms solutions for data analytics in business. The course introduces relevant frameworks and software used in modern data science projects. Commercial and open-source for cloud computing, distributed computing and machine learning, as well as a commercial development platform for in-memory database analytics, are covered. Additional software solutions may be covered by the lecturer as convenient.

Course Outcomes

On successful completion, students will be able to

- comprehend how cloud computing and distributed computing support the field of data analytics.
- understand in-memory database technologies for real-time analytics.
- apply advanced statistics and machine learning solutions to solve data analysis problems.
- compare the capabilities and limitations of the presented software solutions.

Contents

1. Introduction
   - 1.1 Software Systems
   - 1.2 Frameworks
   - 1.3 Distributed Computing
   - 1.4 Databases and Data Warehousing
2. Data Storage
   - 2.1 Data Clustering
   - 2.2 Data Replication
   - 2.3 Data Indexing
   - 2.4 Data Warehousing
3. Statistical Modeling Frameworks
   - 3.1 The R Project for Statistical Computing
   - 3.2 The Python Ecosystem

4. Machine Learning & Artificial Intelligence
   - 4.1 Overview of Modern Machine Learning Frameworks
   - 4.2 Introduction to TensorFlow & Keras

5. Cloud Computing Platforms & On-Premise Solutions
   - 5.1 Advantages and Disadvantages of Cloud, On-premise, and Edge Solutions
   - 5.2 Overview of Cloud Computing Solutions

6. Distributed Computing
   - 6.1 Overview of Distributed Computing Approaches
   - 6.2 Overview of Streaming Approaches
   - 6.3 Other Solutions

7. Database Technologies
   - 7.1 Overview of Database Approaches
     - 7.1.1 Row-based versus Column-based
     - 7.1.2 In Memory DB
     - 7.1.3 Relational DB versus noSQL
     - 7.1.4 Timeseries DB
   - 7.2 Overview of Database Implementations

Literature

Compulsory Reading

Further Reading

- Chambers, B., & Zaharia, M. (2018). Spark: The definitive guide: Big data processing made simple. Newton, MA: O'Reilly Media.
- Elmasri, R., & Navathe, S. B. (2015). Fundamentals of database systems (7th ed.). New York, NY: Pearson.
- Lander, J. P. (2017). R for everyone: Advanced analytics and graphics (2nd ed.). Boston, MA: Addison-Wesley Professional.
- Lyubimov, D., & Palumbo, A. (2016). Apache Mahout: Beyond MapReduce. North Charleston, SC: CreateSpace Independent Publishing.
- Modi, R. (2017). Azure for architects: Implementing cloud design, DevOps, IoT, and serverless solutions on your public cloud. Birmingham: Packt Publishing.
- Valliappa Lakshmanan, V. (2018). Data science on the Google Cloud Platform: Implementing end-to-end real-time data pipelines: From Ingest to machine learning. Newton, MA: O'Reilly Media.
- Walkowiak, S. (2016). Big data analytics with R: Utilize R to uncover hidden patterns in your big data. Birmingham: Packt Publishing.
- White, T. (2015). Hadoop: The definitive guide: Storage and analysis at Internet scale (4th ed.). Newton, MA: O'Reilly Media.
- Wittig, A., & Wittig, M. (2018). Amazon Web Services in action (2nd ed.). Shelter Island, NY: Manning Publications.
- Géron, A. (2017). Hands-on machine learning with Scikit-Learn and TensorFlow. Sebastopol, CA: O'Reilly Media, Inc.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** no **Course Evaluation:** no
Type of Exam	Written Assessment: Written Assignment

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

International and Intercultural Management

Module Code: DLMITEIIM

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. Markus Prandini (Managing Across Borders) / Prof. Dr. Markus Prandini (Intercultural Management)

Contributing Courses to Module

- Managing Across Borders (DLMINTMAB01_E)
- Intercultural Management (DLMINTIM01_E)

Module Exam Type

Module Exam	Split Exam
	Managing Across Borders • Study Format "Fernstudium": Exam, 90 Minutes Intercultural Management • Study Format "Fernstudium": Exam, 90 Minutes

Weight of Module

see curriculum

Module Contents

Managing Across Borders

- International economic and business environment
- Globalization and international competitiveness
- International Trade
- International financial and capital markets
- International organizations and economic integration
- Current hot spots in the international economic and business environment

Intercultural Management

- Fundamentals and classification of intercultural management
- Role and importance of intercultural management for companies
- Diversity management in intercultural management
- Entrepreneurial aspects in decision-making for intercultural management
- Focal points of intercultural management
- Intercultural management in selected countries

Learning Outcomes

Managing Across Borders

On successful completion, students will be able to

- identify the main developments and trends in the global economic environment and use them as a basis for business decisions.
- demonstrate the development of globalization and world trade in the last decades.
- explain the causes and effects of protectionism on a country's economic development.
- understand the interrelationships of international financial and capital markets and assess them with regard to the handling of exchange rate risks.
- explain the importance of international organizations such as the World Trade Organization (WTO) or the International Monetary Fund (IMF) for global cooperation.
- form their own opinion on current issues of international economic policy.

Intercultural Management

On successful completion, students will be able to

- recognize and classify intercultural management as an independent discipline in business administration.
- use important cultural theories and cultural dimensions as a basis for business decisions in an international context.
- analyze relevant core competencies of a company for successful intercultural management and apply them in concrete situations.
- identify and manage culture-specific influences on the strategy, marketing and human resources of internationally active companies.
- apply important aspects of intercultural management in leadership, communication and cooperation in international teams.
- demonstrate cultural sensitivity and deeper understanding of international cooperation with selected cultural regions (Germany, USA, China).

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

Managing Across Borders

Course Code: DLMINTMAB01_E

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

Course Description

The interdependence of economies, markets and technologies has increased continuously over the past decades. In addition to the former three dominant economic areas of the USA, Europe and Japan, emerging markets have joined the group, which play an increasingly important role in world trade. Global networking creates both opportunities and risks for internationally active companies. In this course, students acquire a deeper understanding of global economic, political and technological interrelationships as a basis for strategic decisions of internationally operating companies. In addition to knowledge of international trade, international financial and capital markets, and international organizations, students will be able to form their own well-founded opinion on current developments and trends in the international economic and business environment by the end of this course.

Course Outcomes

On successful completion, students will be able to

- identify the main developments and trends in the global economic environment and use them as a basis for business decisions.
- demonstrate the development of globalization and world trade in the last decades.
- explain the causes and effects of protectionism on a country's economic development.
- understand the interrelationships of international financial and capital markets and assess them with regard to the handling of exchange rate risks.
- explain the importance of international organizations such as the World Trade Organization (WTO) or the International Monetary Fund (IMF) for global cooperation.
- form their own opinion on current issues of international economic policy.

Contents

1. International economic and business environment
   - 1.1 Economic environment
   - 1.2 Political environment
   - 1.3 Technological environment

2. Globalization and international competitiveness
   - 2.1 Definition and development of globalization
   - 2.2 Opportunities and threats of globalization
   - 2.3 International competitiveness

3. International Trade
   - 3.1 Theories and models of international trade
   - 3.2 Importance of international trade for an economy
   - 3.3 Protectionism as a threat to international business

4. International financial and capital markets
   - 4.1 Importance of international financial and capital markets for globally active companies
   - 4.2 International exchange rate regimes
   - 4.3 Hedging of exchange rate risks

5. International organizations and economic integration
   - 5.1 International organizations as the basis of the world economy (WTO, World Bank, ADB, IMF)
   - 5.2 Economic integration as driver for international business (EU, NAFTA, ASEAN)
   - 5.3 Regionalization of the world economy

6. Current hot spots in the international economic and business environment
   - 6.1 USA-China: Struggle for political and economic supremacy
   - 6.2 Emerging Markets: new players in the global economy
   - 6.3 Agenda 2030: Sustainable Development Goals (SDG)

Literature

Compulsory Reading

Further Reading

- Asian Development Bank. https://www.adb.org/ [accessed on 17 August 2020].
- Cavusgil, S.T. / Knight, G. / Riesenberger, J.R. (2019): International Business: The New Realities. 5th Global Edition. Pearson, Harlow England.
- Collinson, S. / Rugman, A. M. / Narula, R. (2017): International business [electronic resource]. Pearson, Harlow England.
- Global Edge. https://globaledge.msu.edu/ [accessed on 17 August 2020].
- Hill, C.W. / Hult, C.T. (2016): International Business. Competing in the International Marketplace. 11th Edition. McGraw-Hill Higher Education, New York.
- International Monetary Fund. https://www.imf.org/ [accessed on 17 August 2020].
- World Bank Group. https://www.worldbank.org/ [accessed on 17 August 2020].
- World Trade Organization. https://www.wto.org/ [accessed on 17 August 2020].

Study Format Fernstudium

Study Format	Course Type
Fernstudium	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

Intercultural Management

Course Code: DLMINTIM01_E

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

Course Description

With the ever growing globalization of the economy, the demands on managers and employees to operate successfully in an international environment have increased. An important core competence of internationally active companies is the skill to competently deal with the idiosyncrasies of other cultures. In business administration, an independent discipline of intercultural management has therefore been developed to examine the behavior and cooperation of people from countries and organizations around the world and to derive recommendations for successful interactions on a corporate and personal level. This course provides students with a conceptual framework for a systematic understanding of the concept of culture, cultural synergies and differences, and the convergence and divergence of cultural norms and values. Students acquire the knowledge and intercultural skills necessary to manage and work across borders and cultures in a changing global business environment.

Course Outcomes

On successful completion, students will be able to

- recognize and classify intercultural management as an independent discipline in business administration.
- use important cultural theories and cultural dimensions as a basis for business decisions in an international context.
- analyze relevant core competencies of a company for successful intercultural management and apply them in concrete situations.
- identify and manage culture-specific influences on the strategy, marketing and human resources of internationally active companies.
- apply important aspects of intercultural management in leadership, communication and cooperation in international teams.
- demonstrate cultural sensitivity and deeper understanding of international cooperation with selected cultural regions (Germany, USA, China).

Contents

1. Fundamentals and classification of intercultural management
   - 1.1 Intercultural management as an independent discipline in business administration
   - 1.2 Important cultural concepts as basis for intercultural management
   - 1.3 Important cultural dimensions as basis for intercultural understanding

2. Role and importance of intercultural management for companies
   - 2.1 International developments and contexts for enterprises
   - 2.2 Connection between national culture and corporate culture
   - 2.3 Entrepreneurial core competencies for successful intercultural management

3. Diversity management in intercultural management
   - 3.1 Working with diversity in companies
   - 3.2 Management styles in individualistic and collectivist cultures
   - 3.3 Reconciliation of cultural dilemmas

4. Entrepreneurial decision-making dimensions of intercultural management
   - 4.1 Strategy
   - 4.2 Marketing
   - 4.3 Human Resources Management (HRM)

5. Focal points of intercultural management
   - 5.1 Intercultural management and Corporate Governance
   - 5.2 Intercultural communication
   - 5.3 Intercultural teamwork

6. Intercultural management in selected countries
   - 6.1 Germany
   - 6.2 USA
   - 6.3 China

Literature

Compulsory Reading

Further Reading

- Browaeys, M-J. / Price, R. (2015): Understanding Cross-Cultural Management. 3rd Edition, Pearson, Upper Saddle River.
- Deresky, H. (2017): International Management: Managing Across Borders and Cultures. 9th Edition, Pearson Education Limited, Harlow.
- Steers, R. M. / Nardon, L. / Sanchez-Runde, C. J. (2016): Management across Cultures. Developing Global Competencies. Cambridge University Press, Cambridge.
- Thomas, D.C. / Inkson, K. (2017): Cultural Intelligence: Surviving and Thriving in the Global Village. 3rd Edition, Berrett-Koehler Publishers, Oakland.
- Trompenaars, F. (2012): Riding the Waves of Culture. Understanding Cultural Diversity in Global Business. 3rd Edition, N. Brealey Publishing, London/Boston.

Study Format Fernstudium

Study Format	Course Type
Fernstudium	Online Lecture

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Exam, 90 Minutes

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
90 h	0 h	30 h	30 h	0 h	150 h

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

DLMINTIM01_E

Process Management with Scrum

Module Code: DLMPREEPMS

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ none ▪ DLMEPREPMS01	MA	10	300 h

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

Module Coordinator

Prof. Dr. Carsten Skerra (Process Management with Scrum) / Prof. Dr. Carsten Skerra (Project: Corporate Project with Scrum)

Contributing Courses to Module

- Process Management with Scrum (DLMPREEPMS01)
- Project: Corporate Project with Scrum (DLMPREEPMS02)

Module Exam Type

Module Exam	Split Exam
	Process Management with Scrum • Study Format "Distance Learning": Workbook Project: Corporate Project with Scrum • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Process Management with Scrum

- Scrum Origin, Basic Idea and Fields of Application
- Scrum Roles
- Product Backlog and Sprint Planning
- Executing the Scrum Process
- Helpful Tools
- Implementation and Scaling of Scrum

Project: Corporate Project with Scrum

After studying the methods of Scrum and learning about the systematic development approach, this course offers the opportunity to transfer the learned contents to practice. Choosing a real project or task within an organization, the method can be experienced and compared to the theoretical concept.

Learning Outcomes

Process Management with Scrum

On successful completion, students will be able to

- understand and explain the contents of the agile manifest.
- understand Scrum as a framework for developing, delivering, and sustaining products in a complex environment.
- describe each of the roles within a Scrum team and explain each item and each step within the Scrum process.
- handle the refinement process of the product backlog and discuss the interaction within the team and to the outside world during and after a sprint.
- understand the concept of user stories and apply the method to simple cases.
- understand and describe possibilities for the scaling of Scrum.

Project: Corporate Project with Scrum

On successful completion, students will be able to

- understand Scrum and its roles within the context of a corporate organization.
- explain the elements and processes of Scrum in detail and out of practical experience.
- create user stories, refine the product backlog and select items for a sprint.
- collaborate in the daily scrum and apply the little tools within the development team.
- discuss critically the benefits and limitations of the Scrum framework.

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

Process Management with Scrum

Course Code: DLMPREEPMS01

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

Course Description

Within the broad field of project management, Scrum falls into the category of agile methods. As such, Scrum is more of a process management framework than a project management method. In this course the Scrum framework will be described and discussed in detail. The Agile Manifesto will be introduced, and the basic idea of iterative and incremental development will be discussed, leading up to the methodology of Scrum. A thorough review will be done on the different roles within the Scrum team. The terms product backlog, refinement and increment are defined and explained. As core feature of Scrum, the execution of sprints and daily scrums will be detailed. For the practical application of Scrum, the handling of requirements and creation of user stories will be introduced. The student also gets to know the little tools for communication and task-tracking used within development teams. Furthermore, the student will learn when and how a Scrum process should be implemented and what kind of benefits and risks can be expected from it.

Course Outcomes

On successful completion, students will be able to

- understand and explain the contents of the agile manifest.
- understand Scrum as a framework for developing, delivering, and sustaining products in a complex environment.
- describe each of the roles within a Scrum team and explain each item and each step within the Scrum process.
- handle the refinement process of the product backlog and discuss the interaction within the team and to the outside world during and after a sprint.
- understand the concept of user stories and apply the method to simple cases.
- understand and describe possibilities for the scaling of Scrum.

Contents

1. Scrum Origin, Basic Idea and Fields of Application
   - 1.1 The Birth of Scrum – How and Why it All Began
   - 1.2 The Agile Manifesto and a Change in Perspective
   - 1.3 The Approach of Iterative and Incremental Development
   - 1.4 Defining Fields for Scrum and Fields for Not Scrum

2. Scrum Roles
   - 2.1 The Development Team
   - 2.2 The Product Owner
   - 2.3 The Scrum Master
   - 2.4 The Customer Involvement
   - 2.5 The Organization

3. Product Backlog and Sprint Planning
   - 3.1 Principles of a Product Backlog
   - 3.2 Refinement Process
   - 3.3 Definition of Ready
   - 3.4 Determining Capacity
   - 3.5 Selecting Items and Defining the Sprint Goal

4. Executing the Scrum Process
   - 4.1 The Scrum Process
   - 4.2 Sprint Cycle
   - 4.3 Daily Scrum
   - 4.4 Sprint Review
   - 4.5 Sprint Retrospective

5. Helpful Tools
   - 5.1 Requirements and User Stories
   - 5.2 Planning Poker
   - 5.3 Communication Tools (e. g. Task Board)
   - 5.4 Tracking Tools (e. g. Burn-down Chart)
   - 5.5 Available Software Tools

6. Implementation and Scaling of Scrum
   - 6.1 Implementation of Scrum in a Company
   - 6.2 Chances, Risks, and Limitations of Scrum
   - 6.3 Scrum of Scrums
   - 6.4 The Nexus Framework for Scaling Scrum
   - 6.5 Other Approaches

Literature
Compulsory Reading
Further Reading ▪ Anon. (2001): Manifesto for Agile Software Development. (URL: https://agilemanifesto.org [Retrieved: 20.03.20201]). ▪ Ockerman, S./ Reindl, S. (2019): Mastering Professional Scrum: Coaches' Notes for Busting Myths, Solving Challenges, and Growing Agility. Addison Wesley Longman, Boston. ▪ Rubin, K. S. (2013): Essential Scrum: A Practical Guide to the Most Popular Agile Process. Addison-Wesley Professional, Boston. ▪ Schwaber, K. / Sutherland, J. V. (2012): Software in 30 days: How Agile Managers Beat the Odds, Delight their Customers and Leave Competitors in the Dust. Wiley, New Jersey. ▪ Sutherland, J. (2015): Scrum: The art of Doing Twice the Work in Half the Time. Random House UK, London. ▪ Verheyen, G. (2019): Scrum: A Pocket Guide: a Smart Travel Companion. 2nd edition, Van Haren Publishing, VW 's-Hertogenbosch.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Workbook

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

Instructional Methods

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

Project: Corporate Project with Scrum

Course Code: DLMPREEPMS02

Study Level	Language of Instruction	Contact Hours	CP	Admission Requirements
MA	English		5	DLMEPREPMS01

Course Description

The course „Project: Corporate Project with Scrum" is building on the basic knowledge of the Scrum Framework acquired in the previous course. The theoretical foundations of Scrum can be applied within a real company environment. The student experiences the advantages of agile work and can reflect on the Scrum roles in practice. The student is also confronted with the hurdles that arise in applying the methodology in a real situation and can experiment with own approaches to solutions.

Course Outcomes

On successful completion, students will be able to

- understand Scrum and its roles within the context of a corporate organization.
- explain the elements and processes of Scrum in detail and out of practical experience.
- create user stories, refine the product backlog and select items for a sprint.
- collaborate in the daily scrum and apply the little tools within the development team.
- discuss critically the benefits and limitations of the Scrum framework.

Contents

- The course „Project: Corporate Project with Scrum" is building on the basic knowledge of the Scrum Framework acquired in the previous course and on the general knowledge of management know-how and classical project management acquired during the previous semesters. Based on a real task to be resolved within an organization (commercial enterprise, public administration, or the like), the students can gain practical experience working with agile methods utilizing the Scrum Framework.
- The students will reflect critically on the similarities and differences they observed and, if applicable, also compare the experienced agile methods with classical methods of project management. To meet scientific criteria, a literature search and a thorough comparison of the scientific and methodological foundation to the practical aspects experienced in the project is strongly encouraged and supported. The business aspect (costs, gain, time, quality, strategic relevance, etc.) of the project should be recognized and analyzed based on scientific methods. The students will demonstrate their ability to combine specialist knowledge and transfer of this knowledge to a specific project in a professional environment. They will also critically reflect on the experienced own work with Scrum, as well as on the theoretical concept of the Scrum Framework itself.

Literature
Compulsory Reading
Further Reading ▪ Anon. (2001): Manifesto for Agile Software Development. (URL: https://agilemanifesto.org [Retrieved: 20.03.20201]). ▪ Ockerman, S./ Reindl, S. (2019): Mastering Professional Scrum: Coaches' Notes for Busting Myths, Solving Challenges, and Growing Agility. Addison Wesley Longman, Boston. ▪ Rubin, K. S. (2013): Essential Scrum: A Practical Guide to the Most Popular Agile Process. Addison-Wesley Professional, Boston. ▪ Schwaber, K. / Sutherland, J. V. (2012): Software in 30 days: How Agile Managers Beat the Odds, Delight their Customers and Leave Competitors in the Dust. Wiley, New Jersey. ▪ Sutherland, J. (2015): Scrum: The art of Doing Twice the Work in Half the Time. Random House UK, London. ▪ Verheyen, G. (2019): Scrum: A Pocket Guide: a Smart Travel Companion. 2nd edition, Van Haren Publishing, VW 's-Hertogenbosch.

Study Format Distance Learning

Study Format	Course Type
Distance Learning	Project

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

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

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

DLMPREEPMS02

Project Management with PRINCE2®

Module Code: DLMPREEPMPR

Module Type	Admission Requirements	Study Level	CP	Student Workload
see curriculum	▪ DLMPREEPMPR01 ▪ none	MA	10	300 h

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

Module Coordinator

Prof. Dr. Margit Sarstedt (Project Management with PRINCE2®) / Prof. Dr. Margit Sarstedt (Project: Corporate Project with PRINCE2®)

Contributing Courses to Module

- Project Management with PRINCE2® (DLMPREEPMPR01)
- Project: Corporate Project with PRINCE2® (DLMPREEPMPR02)

Module Exam Type

Module Exam	Split Exam
	Project Management with PRINCE2® • Study Format "Distance Learning": Workbook Project: Corporate Project with PRINCE2® • Study Format "Distance Learning": Written Assessment: Project Report

Weight of Module

see curriculum

Module Contents

Project Management with PRINCE2®

- Introduction to the PRINCE2® Method
- The Seven Themes
- The Seven Processes
- Creation of Results
- Tailoring
- PRINCE2® Agile

Project: Corporate Project with PRINCE2®

After studying the methods of the structured project management approach of PRINCE2®, this course offers the opportunity to transfer the learned contents to practice. Choosing a real project or task within an organization, the method can be experienced and compared to the theoretical concept.

Learning Outcomes

Project Management with PRINCE2®

On successful completion, students will be able to

- understand and explain the contents of the PRINCE2® framework.
- explain the seven Principles, seven Themes, seven Processes and Tailoring of the project environment.
- describe each of the roles within a PRINCE2® management team.
- explain, how the stages are connected by the defined processes.
- define reporting cycles according to the PRINCE2® guidelines.
- understand and describe how PRINCE2® can be combined with other project management methods and what additional options PRINCE2® Agile is offering.

Project: Corporate Project with PRINCE2®

On successful completion, students will be able to

- understand PRICNE2® and its principles within the context of a corporate organization.
- explain the PRICNE2® Project Management structure as well as the themes and processes of PRICNE2® in detail and out of practical experience.
- set up a Project Management Team with its associated roles.
- start and initiate a project and plan a project stage.
- work with and create management products and specialized products.
- discuss critically the benefits and limitations of the PRICNE2® framework.

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

Project Management with PRINCE2®

Course Code: DLMPREEPMPR01

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

Course Description

Within the broad field of project management methods, the original PRINCE2® method falls into the category of classical (non-agile) methods. It is one of the leading classical project management methods. PRINCE2® is process-oriented and primarily concerned with the actions of the project management team, putting emphasis on the management aspect of a project rather than the execution side. In this course the PRINCE2® framework will be systematically described and discussed in detail. A thorough review will be done on the seven Principles, the seven Themes, the seven Processes, and on Tailoring of the project to the environment. This will be put in relation to the defined roles within the PRINCE2® project management team structure. In this course, in addition to the actions and processes handled by the project management team, the work of the task managers will be reviewed, some of the most important tools for execution of tasks will be introduced and a possible combination with the PMBOK from the PMI will be discussed. The student will learn about the well-structured interaction between project management level and project execution level including the reporting cycles. At the end of the course an outlook on the features of PRINCE2® Agile will be given. The student will gain a thorough understanding of the advantages and disadvantages of the PRINCE2® method and its derivatives.

Course Outcomes

On successful completion, students will be able to

- understand and explain the contents of the PRINCE2® framework.
- explain the seven Principles, seven Themes, seven Processes and Tailoring of the project environment.
- describe each of the roles within a PRINCE2® management team.
- explain, how the stages are connected by the defined processes.
- define reporting cycles according to the PRINCE2® guidelines.
- understand and describe how PRINCE2® can be combined with other project management methods and what additional options PRINCE2® Agile is offering.

Contents

6. PRINCE2® Agile
   - 6.1 Goal of PRINCE2® Agile
   - 6.2 Overview over PRINCE2® Agile
   - 6.3 Similarities and Differences to the Original PRINCE2®

Literature

Compulsory Reading

Further Reading

- AXELOS Limited (2017): Managing Successful Projects with Prince2. TSO, London.
- Bentley, C. (2019): The Concise PRINCE2®: Principles and Essential Themes. 3rd ed., IT Governance Publishing, Cambridgeshire.
- Cooke, J. L. (2016): PRINCE2 Agile An Implementation Pocket Guide: Step-by-Step Advice for Every Project Type. IT GOVERNANCE PUBLISHING, New York.
- International Conference on Electronics, Computers and Artificial Intelligence; Universitatea din Piteşti; Institute of Electrical and Electronics Engineers; IEEE Industry Applications Society; ECAI (2017). Proceedings of the 9th International Conference on Electronics, Computers and Artificial Intelligence - ECAI-2017: 29 June - 01 July 2017, IEEE: New Jersey.
- Mathis, B. (2014): Prince2 for Beginners: Prince2 Study Guide for certification & project management. N.p.

Study Format Distance Learning

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

Information about the examination	
Examination Admission Requirements	**BOLK:** yes **Course Evaluation:** no
Type of Exam	Workbook

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
110 h	0 h	20 h	20 h	0 h	150 h

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

Project: Corporate Project with PRINCE2®

Course Code: DLMPREEPMPR02

Study Level	Language of Instruction	Contact Hours	CP	Admission Requirements
MA	English		5	DLMPREEPMPR01

Course Description

The course „Project: Corporate Project with PRICNE2®" is building on the basic knowledge of the PRICNE2® framework acquired in the previous course. The studied theoretical concept can be applied within a real company environment. The student experiences the advantages of project management in stages and can reflect on the relation between project management and task execution. The student is also confronted with the hurdles that arise in applying the methodology in a real situation and can experiment with own approaches to solutions.

Course Outcomes

On successful completion, students will be able to

- understand PRICNE2® and its principles within the context of a corporate organization.
- explain the PRICNE2® Project Management structure as well as the themes and processes of PRICNE2® in detail and out of practical experience.
- set up a Project Management Team with its associated roles.
- start and initiate a project and plan a project stage.
- work with and create management products and specialized products.
- discuss critically the benefits and limitations of the PRICNE2® framework.

Contents

- The course „Project: Corporate Project with PRICNE2®" is building on the basic knowledge of the PRICNE2® framework acquired in the previous course and on the general knowledge of management know-how and classical project management acquired during the previous semesters. Based on a real task to be resolved within an organization (commercial enterprise, public administration, or the like), the students can gain practical experience in setting up a project management team according to PRICNE2®.
- The students will reflect critically on the similarities and differences they observed, and, if applicable, also compare the experienced classical methods with agile methods of project management. To meet scientific criteria, a literature search and a thorough comparison of the scientific and methodological foundation to the practical aspects experienced in the project is strongly encouraged and supported. The business aspect (costs, gain, time, quality, strategic relevance, etc.) of the project should be recognized and analyzed based on scientific methods. The students will demonstrate their ability to combine specialist knowledge and transfer of this knowledge to a specific project in a professional environment. They will also critically reflect on the experienced own work with PRINCE2®, as well as on the theoretical concept of the PRINCE2® framework itself.

Literature
Compulsory Reading
Further Reading ▪ AXELOS Limited (2017): Managing Successful Projects with Prince2. TSO, London. ▪ Bentley, C. (2019): The Concise PRINCE2®: Principles and Essential Themes. 3rd ed., IT Governance Publishing, Cambridgeshire. ▪ Cooke, J. L. (2016): PRINCE2 Agile An Implementation Pocket Guide: Step-by-Step Advice for Every Project Type. IT GOVERNANCE PUBLISHING, New York. ▪ International Conference on Electronics, Computers and Artificial Intelligence; Universitatea din Piteşti; Institute of Electrical and Electronics Engineers; IEEE Industry Applications Society; ECAI (2017). Proceedings of the 9th International Conference on Electronics, Computers and Artificial Intelligence - ECAI-2017: 29 June - 01 July 2017, IEEE: New Jersey. ▪ Mathis, B. (2014): Prince2 for Beginners: Prince2 Study Guide for certification & project management. N.p.

Study Format Distance Learning

Study Format	**Course Type**
Distance Learning	Project

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

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
120 h	0 h	30 h	0 h	0 h	150 h

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

DLMPREEPMPR02

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
see curriculum	Minimum 1 semester	WiSe/SoSe	English

Module Coordinator

Prof. Dr. André Köhler (Master Thesis) / Prof. Dr. André Köhler (Colloquium)

Contributing Courses to Module

- Master Thesis (DLMMTHES01)
- Colloquium (DLMMTHES02)

Module Exam Type

Module Exam	Split Exam
	Master Thesis • Study Format "Fernstudium": Written Assessment: Master Thesis (90) Colloquium • Study Format "Fernstudium": Presentation: 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 IUBH**
All modules in the master program	All Master Programmes

Master Thesis

Course Code: DLMMTHES01

Study Level	Language of Instruction	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 ▪ Hunziker, A. W. (2010): Fun at scientific work. This is how you write a good semester, bachelor or master thesis. 4th edition, SKV, Zurich. ▪ Wehrlin, U. (2010): Scientific work and writing. Guide to the preparation of Bachelor's theses, Master's theses and dissertations - from research to book publication. AVM, Munich. ▪ Selection of literature according to topic

Study Format Fernstudium

Study Format	Course Type
Fernstudium	Thesis

Information about the examination	
Examination Admission Requirements	**BOLK:** no **Course Evaluation:** no
Type of Exam	Written Assessment: Master Thesis

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
405 h	0 h	0 h	0 h	0 h	405 h

Instructional Methods

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

Colloquium

Course Code: DLMMTHES02

Study Level	Language of Instruction	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 Fernstudium

Study Format	Course Type
Fernstudium	Thesis Defense

Information about the examination	
Examination Admission Requirements	**BOLK:** no **Course Evaluation:** no
Type of Exam	Presentation: Colloquium

Student Workload					
Self Study	**Presence**	**Tutorial**	**Self Test**	**Practical Experience**	**Hours Total**
45 h	0 h	0 h	0 h	0 h	45 h

Instructional Methods

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