Module Handbook

for Master degree program „Information Systems“
of the University of Münster

valid from Wintersemester 2018/19

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Inhalt

Information Management: Managing the Information Age Organization

Module Title english:	Information Management: Managing the Information Age Organization				
Course Program:	Master Information Systems				
1	**Module No:** IM1	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Managing the Information Age Organization	Compulsory	30 h (2 CH)	90
2	Exercise	Tutorial on Managing the Information Age Organization	Compulsory	30 h (2 CH)	30

4 **Module Profile:**

Purpose of the module/integration into curriculum:
The lecture Managing the Information Age Organization assumes that students have a basic understanding of Business Administration, Management Studies, and business applications of information technology as conveyed in Bachelor Programs in IS and related fields.

Course content:
The lecture provides students with a sound understanding of management and management theories as well as with the foundations of the information society. On the basis of this understanding, students are confronted with management challenges prevalent in the information age. While doing this, special emphasis is laid on how information technology affects the capabilities of an organization to compete in the information economy. Teaching is conducted through traditional lectures complemented with case study work and discussions in the classroom. Additional reading material is provided in order to allow students to review parts of the content at their leisure and to extend their knowledge in areas of personal interest.

5 **Learning outcomes:**

Academic:
After attending the course students should be familiar with the foundations of management, i.e. (strategic) planning, controlling, organization, and leadership. They should understand the specific conditions organizations are exposed to in the "Information Age" and be able to explain the technological, social and economic phenomena constituting it. Furthermore, they are expected to have an idea of how the information age challenges traditional management concepts and what appropriate responses to these challenges might look like.

Soft skills:
The course introduces students to the analysis of case studies in small groups and furthers their ability to actively participate in classroom discussions.

6 **Description of possible electives within the modules:**
The module can be taken as part of the track Information Management or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Final Module Exam

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	up to 120 min.	100 %

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	4.00 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Managing the Information Age Organization
	No 2: Tutorial on Managing the Information Age Organization

16 **Responsible Lecturer:**
Prof. Dr. Stefan Klein, Dr. Stefan Schellhammer

Department:
School of Business and Economics

17 **Misc.:**

Information Management: Tasks and Techniques

Module Title english:	Information Management: Tasks and Techniques				
Course Program:	Master Information Systems				
1	**Module No:** IM2	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Tasks and Techniques	Compulsory	30 h (2 CH)	90
2	Exercise	Exercise on Tasks and Techniques	Compulsory	30 h (2 CH)	30

4 **Module Profile:**

Purpose of the module/integration into curriculum:
The course requires a sound understanding of both management studies and information processing in business. This course interlinks with the course "Managing the Information Age Organization", which deepens the students' understanding of management basics that this course builds upon. In order to provide students from a non IS-background with the managerial understanding of information processing necessary for participating successfully in this course, an extensive script on this subject is provided at the beginning of the semester.

Course content:
The lecture provides students with an overview of executives' duties in managing an organization's information and communication capabilities. These duties include tasks such as strategic information planning, strategy implementation, as well as sourcing and organizing the information function. These tasks are structured in a comprehensive framework based on management theory. While identifying critical IM tasks and responsibilities, the course presents methods and techniques that can be applied to deal with them. Class discussions on case studies give students the opportunity to consolidate their newly acquired knowledge and apply the techniques presented to typical problems. In addition, occasional discussions with IT executives allow students to reflect their conceptual knowledge in light of real world practices.

5 **Learning outcomes:**

Academic:
The course provides students with skills indispensable for an IT executive. In particular, students will obtain a comprehensive overview of the field of IT management and get acquainted with the typical tasks IT managers are charged with. They will also get to know prominent frameworks and techniques to solve IM tasks as proposed in textbooks.

Soft skills:
In addition to expertise in the fields mentioned above, students will deepen their skills in constructively analyzing and solving case studies in both classroom settings and as part of individual assignments.

6 **Description of possible electives within the modules:**
The module can be taken as part of the track Information Management or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Final Module Exam

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	up to 120 min.	100 %

9 **Study Work:**

No	Number and Type; Connection to Course	Duration
1	Answering case-study questions	10 pages

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	3.00 CP
Study Work	No 1	1.00 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Tasks and Techniques
	No 2: Exercise on Tasks and Techniques

16 **Responsible Lecturer:**
Prof. Dr. Stefan Klein, Dr. Alexander Teubner

Department:
School of Business and Economics

17 **Misc.:**

Information Management: Theories

Module Title english:		Information Management: Theories				
Course Program:		Master Information Systems				
1	**Module No:** IM3	**State:** Elective	**Language of Instruction:** English			
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180	

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Theories	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Theories	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:
A sound understanding of management and information management as provided in the courses "Managing the Information Age Organization" and "Information Management Tasks & Techniques".

Course content:
This course deepens the students' understanding of IM tasks and techniques in that it enables them to assess underlying theoretical propositions in more detail. To this end, the lecture introduces important management theories, including market, resource and capability based theories of strategic information systems, IT strategy theory, IT value and productivity theory, organization theory of IT and theories of sourcing and governing the information function. Moreover, on the basis of this theoretical knowledge, critical issues of IM are discussed in the light of the controversial academic discussions surrounding them. The course builds on well-prepared class discussions rather than traditional lectures. The lecturer will support learning by carefully selecting papers and placing them into a broader "theoretical landscape". He will moderate and facilitate the discussions, and provide feedback on the assignments during the semester (reading papers, preparing presentations, writing minutes).

5 **Learning outcomes:**

Academic:
After the completion of this course, students will a) have access to the academic debate on IM, specifically, the international academic debate on the most important or discussed issues of information management. The students will b) discern theories underlying the frameworks and techniques proposed for solving IM tasks, including market, resource and capability based theories of strategic information systems, IT strategy theory, IT value productivity theory, organization theory of IT and theories of sourcing and governing the information function. They will be able to c) will develop a repertoire of theoretical approaches and be able to apply them to issues of information management and d) will understand the contributions of important management theories to the IS fieldand will be able to assess these tools and the underlying theories critically.

Soft skills:
In addition to providing students with the capabilities to deal with academic literature reflectively, the course trains them in presenting their take on selected academic papers to the class and furthers their general ability to take an active part in academic discussions. This ability is based

	on a combination of reading, thinking, writing, discussing and listening skills. Students will practice their collaboration skills and develop techniques for efficient collaboration
6	**Description of possible electives within the modules:** The module can be taken as part of the track Information Management or as an elective. Within the electives a minimum of 2 seminars has to be taken.
7	**Examination:** Examinations for every part of the module
8	**Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written Exam (N° 1)	Up to 120 min.	60 %
2	Reflexion on readings by presentation (groups of 3-5 students), written report and comments on reading (N° 2)	ca. 20 min., ca 5 pages, ca 6 pages	40 %

9	**Study Work:** none
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.
11	**CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
	No 2	1.50 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success
15	**Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Theories
	No 2: Exercise on Theories

16	**Responsible Lecturer:** Prof. Dr. Stefan Klein, Dr. Alexander Teubner	**Department:** School of Business and Economics

17	**Misc.:**

Process Management: Information Modeling

Module Title english:	Process Management: Information Modeling				
Course Program:	Master Information Systems				
1	**Module No:** PM1	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Information Modeling	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Information Modeling	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:

The lecture is on one of the core topic areas in Information Systems and Business Process Management: Conceptual Modeling (i.e., process modeling, data modeling, organizational modeling etc.) with a focus on the use and reuse of conceptual models in business. Hence, the focus is not on how to create a conceptual model, but on what are the preconditions of models to really be usable in practice and on approaches and methodologies supporting model use and reuse, especially model analysis. The lecture therefore provides a theoretical basis for courses applying modeling techniques, such as PM2, PM3, BI1, ISD1, ISD2, ISD3, PR1, PR2, and PR3.

Course content:

Themes	Learning objectives
Meta modeling / meta meta modeling / meta modeling tools	To be able to design modeling languages with meta models, and to be able to design modeling tools and meta modeling tools with meta model and meta model-based databases.
Modeling frameworks	To be able to provide an overview of modeling frameworks, to be able to evaluate and compare them, and to be able to apply selected parts of them.
Model variant management	To be able to apply selected approaches on model variant management onto models of different modeling languages.
Model disambiguation	To know why unambiguous models are a precondition for actually using them for business purposes, and to apply selected methodologies on model disambiguation.
Model analysis	To know different areas of model analysis, for instance process improvement, process compliance, model transformation, model comparison, model integration, and to be able to apply selected approaches on model analysis. The focus is on pattern-based model querying.

	Process mining	To be able to explain the purpose and the basics of process mining and to apply selected process mining approaches.
	Domain-specific modeling	To explain domain-specific modeling and to be able to argue both in favor and against the usage of such modeling approaches.

5

Learning outcomes:
Academic:
Impart a broad and profound understanding of the main tasks and challenges of conceptual modeling in Business Process Management. Facilitate understanding of different modeling and model analysis approaches and judge their appropriateness for specific contexts of application.
Soft skills:
The ability to organize small working groups independently and to give presentations in front of a large audience.

6

Description of possible electives within the modules:
The module can be taken as part of the track Process Management or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final Written Exam	120 min.	100 %

9

Study Work:

No	Number and Type; Connection to Course	Duration
1	10 exercises (case studies) in groups from 5 - 6 students, 4 presentations per participant	4-8 pages/case study, ca. 20 min/presentation

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	3.00 CP
Study Work	No 1	1.00 CP
Total		6 CP

12

Weight of the module grade for the overall grade:
6/120 (5%)

13

Module Prerequisites:
Understand basics of conceptual modeling, that is, process modeling and data modeling.

14

Presence:
Presence is strongly recommended to warrant learning success

15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Information Modeling
		No 2: Exercise on Information Modeling
16	**Responsible Lecturer:** Prof. Dr. Dr. h.c. Dr. h.c. Jörg Becker	**Department:** School of Business and Economics
17	**Misc.:** Besides conceptual work, the course includes work with selected Business Process Managment tools related to conceptual modeling: Process modeling tools, process analysis tools, and process mining tools.	

Process Management: Enterprise Architecture Management

Module Title english:	Process Management: Enterprise Architecture Management				
Course Program:	Master Information Systems				
1	**Module No:** PM2	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Enterprise Architecture Management	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Enterprise Architecture Management	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:

This course stresses the aspect of IM as an engineering discipline, in contrast to being a management discipline only. The fundamental idea is to describe organizations as a whole, consisting of goals and strategies, business models, processes, people and information technology. Enterprise Architecture Management propagates a holistic approach that primarily aims at aligning the spheres of business and IT within one or across several companies and at facilitating and governing transformation processes. The Information Manager thereby has the role of an architect of the corporate information infrastructure. The Module "Managing IT in the Information Age" introduces students to the tasks and tools in Information Management thus setting the scene for this Module.

Course content:

This course provides insights into the concepts and methods of Enterprise Architecture Management. The need for architectures in complex organizations as an instrument for transformation is motivated by the challenges enterprises face in today's business. Architectures support the effective planning and governance of enterprises as a whole consisting of business and IT. Consistently implemented, they facilitate the understanding of business entities' interrelationships, set them in relation to strategic goals and help define the desired to-be state and the roadmap for its realization. For this purpose, concepts, methods, models and tools are discussed and enriched with insights from practice. The introduction of a specialized modeling language introduces the students to the creation of architectural artifacts. The concrete architecture realization process is underlined by the study of architecture frameworks currently discussed in research and practice.

Themes	Learning objectives
Motivation of Enterprise Architecture Management	To learn about the challenges today's enterprises are facing and the answers Enterprise Architecture Management provides in this context.
Positioning Enterprise Architecture Management	To learn the definition and major concepts of Enterprise Architecture Management, about its key applications and its role as a bridge from strategy to design.

Management areas and best practices	To learn about the management areas relevant to Enterprise Architecture Management and associated best practices commonly applied.
Modeling of Enterprise Architectures	To learn how to create different architectural artifacts and to connect them to create a holistic, purposeful picture of the enterprise. Moreover, to learn to use viewpoints to generate stakeholder-specific views of the architecture.
Frameworks in Enterprise Architecture Management	To learn why frameworks play an important role in Enterprise Architecture Management and to get to know prominent frameworks that are vividly discussed in research and practice.

5

Learning outcomes:
Academic:
The students' ability to develop and manage Enterprise Architectures is the course's major goal. An understanding of current developments and frameworks in the domain of architecture implementation should be obtained. Students are equipped with methods for planning, creating and governing such architectures. Furthermore, practical skills in architecture development will be conveyed with work on case studies and presentation of the results.
Soft skills:
Students are encouraged to prepare the contents of the lecture and exercises and to perform follow-up work in teams. This is supported by a Learnweb discussion forum that is guided by the chair. The case study is organized as group work and thus promotes the students' ability to cooperate in teams and to manage their time efficiently. The intermediary results are presented regularly by the groups in front of the complete audience. This enhances the students' presentation and discussion skills. The creation of architectural models by using a syntactically and semantically defined modeling language sharpens analytical and logic skills.

6

Description of possible electives within the modules:
The module can be taken as part of the track Process Management or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written Exam (N° 1)	120 min.	60 %
2	Case Study with EAM-Software, Presentation (N° 2)	ca. 40 pages, ca. 40 min. presentation	40 %

9

Study Work: none

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
	No 1	2.50 CP

	Relevant Work	No 2	1.50 CP
	Total		6 CP
12	**Weight of the module grade for the overall grade:** 6/120 (5%)		
13	**Module Prerequisites:** none		
14	**Presence:** Presence is strongly recommended to warrant learning success		
15	**Mobility/Acknowledgement:**		
	Use of the module for other course programs	Master Business Administration, Master Information Systems	
	English translation of module components from section 3	No 1: Enterprise Architecture Management	
		No 2: Exercise on Enterprise Architecture Management	
16	**Responsible Lecturer:** Prof. Dr.-Ing. Bernd Hellingrath	**Department:** School of Business and Economics	
17	**Misc.:**		

Process Management: Workflow Management

Module Title english:	Process Management: Workflow Management				
Course Program:	Master Information Systems				
1	**Module No:** PM3	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3

Module Structure:

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Workflow Management	Compulsory	30 h (2 CH)	30
2	Exercise	Exercise on Workflow Management	Compulsory	30 h (2 CH)	90

4

Module Profile:

Purpose of the module/integration into curriculum:

The module provides insights into Workflow Management, which is the interface between the conceptual requirements towards process automation of companies, and the translation and implementation on the side of the company's Information Technology department. The module "Information Modelling" serves as a conceptual foundation. It is beneficial to have attended to it first. The module "Enterprise Architecture Management" provides a more exhaustive view on the integration of several application systems into a company's IT infrastructure, of which Workflow Management Systems are part of.

Course content:

The module delivers basic and advanced concepts of Workflow Management (WfM), and information about the most widely used reference for WfM. It covers the whole spectrum of the Process Life-Cycle, starting from Environmental Analysis, to Process Design, Implementation, Enactment, and Evaluation. Furthermore, the module entails an exhaustive Case study, in which the students have to build a WfM System, connecting two fictional companies.

Themes	Learning objectives
(1) Basics of Workflow Management	To be able to provide an overview of the entire Process Life-Cycle, the methods applied, and to explain its relevance in the context of Enterprise Architecture Management.
(2) Conceptual workflow definition	To be able to create conceptually consistent and implementable workflow models.
(3) Technical workflow implementation	To be able to understand and create workflow implementations, and to explain the relations between (2) and (3).
(4) Workflow Management Systems	To be able to actually implement workflows with Workflow Management Systems used in practice.

5

Learning outcomes:

Academic:

The ability to manage business process redesign projects in organizations, an understanding of the challenges faced in the course of such a project, and techniques to cope with them.

Soft skills:

	The ability to organize small working groups independently and to give presentations in front of a large audience.
6	**Description of possible electives within the modules:** The module can be taken as part of the track Process Management or as an elective. Within the electives a minimum of 2 seminars has to be taken.
7	**Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written Exam (N° 1)	120 min.	50 %
2	Presentation (N° 2)	max. of 30 min.	50 %

9 **Study Work:**

No	Number and Type; Connection to Course	Duration
1	Case study with group presentation (divided into max. 4 subpresentations)	max. 80 minutes

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	1.50 CP
	No 2	1.50 CP
Study Work	No 1	1.00 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Workflow Management
	No 2: Exercise on Workflow Management

16	**Responsible Lecturer:** Dr. Armin Stein	**Department:** School of Business and Economics
17	**Misc.:**	

Business Networks: Interorganizational Systems

Module Title english:	Business Networks: Interorganizational Systems				
Course Program:	Master Information Systems				
1	**Module No:** BN1	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Interorganizational Systems	Compulsory	30 h (2 CH)	45
2	Exercise	Exercise on Interorganizational Systems	Compulsory	30 h (2 CH)	75

4 **Module Profile:**

Course content:

Networks have become ubiquitous forms of organizing in and between economy, public administration and society at large. On the backdrop of this development, this module introduces interorganizational systems and networks in a business context, yet with linkages to public administration (e.g. customs) and social networks. It aims to explore the contingencies and strategies that lie behind the evolution and use of interorganizational information infrastructures and applications (IOS). Further, students will examine the impact of IOS on distributed forms of value generation such as electronic markets and various types of networks. Drawing on case examples as well as theoretical concepts, a life cycle perspective of IOS management will be introduced. The implications of IOS will be discussed from various perspectives such as industry transformation, intermediation, strategic management, organization, information management, IS development and standardization. This discussion will be informed by theories addressing networking issues such as institutional economics, collective action or organization theory.

Themes	Learning objectives
Transaction cost economics, strategic lenses on networks, organizational and governance issues, managing (in) a collaborative environment, standardization, ecosystems and infrastructures,	The students will acquire a repertoire of theories and concepts to study corporate networks and learn how to apply them to selected cases of networks in order to explain their design and evolution. They will understand contingencies of network design and key dimensions of network management. This enables them to contribute to theoretical and empirical research as well as to create and shape practical socio-technical systems based on well-founded principles.

5 **Learning outcomes:**

Academic:

Upon completion of this course, students will

a) be able to distinguish different approaches to govern economic activities and different types of interorganizational network arrangements.

b) They will be able to discuss the suitability of networks for different economic tasks and environments.
c) They will comprehend dilemmas involved in the development of standards.
d) They will be able to reflect on approaches for managing in a dynamic, networked environment, including the facilitation of collaboration and ambidexterity.
e) The participants will develop a repertoire of theoretical approaches and be able to apply them to explain cases of IOS and interorganizational infrastructures across various industries.

Soft skills:

a) In addition to providing students with the capabilities to deal with academic concepts and literature reflectively, the course helps to further the students' ability to take an active part in discussions. This ability is based on a combination of reading, thinking, writing, discussing and listening skills.
b) Moreover, students will develop skills in applying these techniques to practical problems.
c) Course assignments will be organized as group work, so that students can practice their collaboration skills and learn techniques for efficient collaboration.

6 **Description of possible electives within the modules:**
The module can be taken as part of the track Business Networks or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written Exam (N° 1)	120 min.	50 %
2	In groups of 3 - 5 students: Reflexion on readings by presentation, written report and comments on reading (N° 2)	Ca. 15 min., ca 5 pages, ca 6 pages	50 %

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.00 CP
	No 2	2.00 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success

15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Interorganizational Systems
		No 2: Exercise on Interorganizational Systems
16	**Responsible Lecturer:** Prof. Dr. Stefan Klein	**Department:** School of Business and Economics
17	**Misc.:**	

Business Networks: Information Security

Module Title english:	Business Networks: Information Security				
Course Program:	Master Information Systems				
1	**Module No:** BN2	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Information Security	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Information Security	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Course content:

This lecture covers the foundations of information security including the specification of protection goals, adversary models, security mechanisms (e.g., identification, access control) and cryptographic primitives to enforce protection goals in distributed systems (e.g., symmetric and asymmetric encryption, integrity protection). Security mechanisms will be discussed both from the perspective of a system operator, who protects a larger distributed system, as well as from the end users' point of view, who may wish to use security technology to self-protect against untrustworthy system operators.

Themes	Learning objectives
Lecture: Theoretical Security, Practical Security, Security Strategy, Privacy Exercise: Primer on Information Theory, Primer on Coding Theory, Primer on Number Theory, Primer on Computational Complexity, Block Cipher Operating Modes, exercises accompanying the lecture	This course contributes to ensure that every graduate who potentially makes decisions with security impact has sufficient knowledge to a) identify security issues, b) communicate effectively with security experts, c) keep aware of changing technological limits, d) evaluate security advises critically and comprehensively, e) oversee the implementation of security measures, and f) assume responsibility for their effects and potential sideeffects.

5 **Learning outcomes:**

Academic:

a) identify security issues b) keep aware of changing technological limits c) evaluate security advises critically and comprehensively d) oversee the implementation of security measures

Soft skills:

a) communicate effectively with security experts b) assume responsibility for their effects and potential sideeffects

6 **Description of possible electives within the modules:**
The module can be taken as part of the track Business Networks or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Oral examination (N° 1)	Ca. 20 min.	80 %
2	One written exercise (N° 2)	Ca. 10 pages	20 %

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	3.00 CP
	No 2	1.00 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Information Security
	No 2: Exercise on Information Security

16 **Responsible Lecturer:**
Prof. Dr. Mathias Fischer

Department:
School of Business and Economics

17 **Misc.:**

Business Networks: Network Economics

Module Title english:	Business Networks: Network Economics				
Course Program:	Master Information Systems				
1	**Module No:** BN3	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Network Economics	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Network Economics	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:
There is intentional overlap with the module BN Interorganizational Systems, which complements this course by taking a qualitative-holistic approach to questions in the scope of network economics.

Course content:
This course provides an introduction to network economics. It teaches methodological and formal economics skills tailored to students of Information Systems. Emphasis is put on simple models lending themselves to rigorous solutions. Participants immerse in the notion that networks form the social and economic fabric of an information society, and grasp the emergent properties of technical design choices. They learn by examining many practical examples to appreciate the power of networks as well as ways to control it. Successful graduates are equipped with essential skills that qualify them for assuming responsibility in strategy teams of network industries (including start-ups), policy-making bodies, or research institutions.

Themes	Learning objectives
History and foundations of network economics, agents, incentives, externalities, network structures, topologies, and dynamics, primers on game and graph theory, patterns and strategies of behaviour in networks (games, random graphs, degree distributions; non-cooperative network games, congestion, risk propagation; network formation, dynamics, standards, adoption; network management and regulation, pricing, strategic partnerships, competition); analysis tools, as well as practical examples	a) Students learn to “think in networks”. They get a deep understanding of the role of network topology as a distinctive factor that defines the properties of complex social and technical systems. They get used to the ideas of emergence, feedback loops and equilibria. b) They will develop a repertoire of models to describe as well as analytical tools to analyze and explain phenomena arising in networks. c) They can apply their knowledge to study new real-world problems with the lens of network economics and develop appropriate research designs. d) Awareness of the limitations of formal models, taught by examples of failure,

	prevents blind reliance and encourages responsible action.

5

Learning outcomes:
Academic:
a) They dispose of models to describe as well as analytical tools to analyze and explain phenomena arising in networks b) Contribute to theoretical and empirical research c) Create and shape practical socio-technical systems based on well-founded principles.
Soft skills:
a) Students learn to "think in networks". They get a deep understanding of the role of network topology as a distinctive factor that defines the properties of complex social and technical systems. They get used to the ideas of emergence, feedback loops and equilibria b) They can apply their knowledge in unprecedented ways to study new real-world problems with the lens of network economics c) Awareness of the limitations of formal models, taught by examples of failure, prevents blind reliance and encourages responsible action.

6

Description of possible electives within the modules:
The module can be taken as part of the track Business Networks or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final Written Exam	120 min.	100 %

9

Study Work:

No	Number and Type; Connection to Course	Duration
1	12 written comments on weekly reading	ca. 0,5 page per comment
2	Group Presentation (ca 3-5 students)	Ca. 20 min.
3	Written report	Ca. 5 pages

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
Study Work	No 1	0.50 CP
	No 2	0.50 CP
	No 3	0.50 CP
Total		6 CP

12

Weight of the module grade for the overall grade:
6/120 (5%)

13	**Module Prerequisites:** none	
14	**Presence:** Presence is strongly recommended to warrant learning success	
15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Network Economics
		No 2: Exercise on Network Economics
16	**Responsible Lecturer:** Prof. Dr. Stefan Klein	**Department:** School of Business and Economics
17	**Misc.:**	

Business Intelligence: Management Information Systems and Data Warehousing

Module Title english:	Business Intelligence: Management Information Systems and Data Warehousing				
Course Program:	Master Information Systems				
1	**Module No:** BI1	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Management Information Systems and Data Warehousing	Compulsory	30 h (2 CH)	60
2	Exercise	Exercises on Management Information Systems and Data Warehousing	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:

This module is embedded into the Business Intelligence track in a way that it complements the Data Analytics courses from a business and system perspective. In contrast to the other two modules in this track, Management Information Systems and Data Warehousing (MIS+DWH) does not focus on statistical methods. It can be seen as an extension to the Data Management course from the Bachelor degree, as the design of Data Warehouse systems is linked to understanding the modeling of databases and underlying analytical processes (e.g., OLAP). The Data Integration course is seen as a valuable supplement: while in MIS+DWH the focus is set on activities within the Data Warehouse, Data Integration is mostly concerned with getting the data from various sources into one system, which is the Data Warehouse in this case.

Course content:

Business Intelligence (BI) refers to a variety of methods and techniques for the analysis of business data such as Data Warehousing (DWH), Reporting, Online Analytical Processing (OLAP), and Data Mining. This module addresses the methodical design and implementation of Data Warehouse systems in support of management's decision making, particularly via appropriate use of multidimensional schema design, ETL, and OLAP techniques. All relevant concepts are demonstrated from both a theoretical and a practical perspective. In this course, traditional lectures are complemented by student presentations that provide additional content. In addition, exercises and case studies provide sample opportunities to perform the various development phases in (pseudo-) practical settings. The practical perspective is enriched by guest lectures from the field.

Themes	Learning objectives
Data Warehousing Fundamentals	To define architectures and use cases of Data Warehousing and Management Information Systems and to assess their roles for companies
OLAP Processing and Optimization	To compare differences between OLTP and OLAP; to contrast OLAP workloads and demonstrate appropriate OLAP optimization techniques

ETL Design	To compare different ETL processes and tools; to design simple ETL processes
OLAP Modeling	To describe the role of functional dependencies for the identification of multidimensional structures; to design multidimensional structures
OLAP Modeling Approaches	To assess different OLAP modeling approaches; to demonstrate conceptual modeling of scenarios according to an appropriate approach
OLAP Implementation	To describe the architecture and functionality of OLAP systems; to implement reports with a standard BI platform according to a case study
Modern Architectures	To characterize modern architectures addressing hardware trends (multi/many core, in-memory), novel data requirements (Big Data, streaming data), and increased user expectations (situational BI)
Project Management	To compare different approaches to engage in MIS/DWH projects; to evaluate different BI strategies in organizations and understand their implementation
Information Management	To understand Data Science concepts; to be able to apply information needs analyses

5

Learning outcomes:
Academic:
The students learn to know common methods and practices as well as technological foundations for creation and maintenance of Data Warehouse and Management Information Systems. The students will develop an understanding of the most common terms in the domain and will be able to critically reflect on these.
Soft skills:
Through exercises and presentations, students are able to develop the following soft skills:

- Presentation techniques
- Team work
- Ability to communicate and collaborate
- Autonomous working
- Time management
- Application of theoretical concepts in practical settings

6

Description of possible electives within the modules:
The module can be taken as part of the track Business Intelligence or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final Written Exam	120 min.	100 %

9

Study Work:

No	Number and Type; Connection to Course	Duration
1	4 Exercises	each 10 pages
2	1 presentation	20 minutes

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
Study Work	No 1	1.00 CP
	No 2	0.50 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Management Information Systems and Data Warehousing
	No 2: Exercises on Management Information Systems and Data Warehousing

16 **Responsible Lecturer:**
Prof. Dr. Dr. h.c. Dr. h.c. Jörg Becker, Prof. Dr. Gottfried Vossen

Department:
School of Business and Economics

17 **Misc.:**

Business Intelligence: Data Analytics - I

Module Title english:		Business Intelligence: Data Analytics - I			
Course Program:		Master Information Systems			
1	**Module No:** BI2	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Data Analytics I	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Data Analytics - I	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:
The track "Business Intelligence" offers a way to start a career in Data Science, Database Management and the like. The students are supposed to be familiar with the basic concepts from probability theory and statistics and the Statistical Programming Language R.

Course content:
The lecture focusses on multivariate statistical methods in the context of Data Science. The main topics are data preprocessing and unsupervised learning. Practical exercises using the statistical Software R are integrated into the lecture and a tutorial.

Themes	Learning objectives
Data Preprocessing	Data quality analysis and data cleaning a-priori to quantitative analysis
Unsupervised Learning	Clustering, Dimensionality Reduction Techniques

5 **Learning outcomes:**

Academic:
The student is supposed to have an understanding of state of the art techniques in Data Science, specifically unsupervised learning, as well as the ability to choose and implement (in R) an appropriate technique for a given practical task.

Soft skills:
Team work, presentation techniques

6 **Description of possible electives within the modules:**
The module can be taken as part of the track Business Intelligence or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

	No	**Number and Type; Connection to Course**	**Duration**	**Part of final mark in %**
	1	Final Written Exam	120 min.	100 %

9	**Study Work:** none
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	4.00 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is recommended to warrant learning success.

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Data Analytics I
	No 2: Exercise on Data Analytics - I

16	**Responsible Lecturer:** Prof. Dr. Heike Trautmann	**Department:** School of Business and Economics
17	**Misc.:**	

Business Intelligence: Data Analytics - II

Module Title english:	Business Intelligence: Data Analytics - II				
Course Program:	Master Information Systems				
1	**Module No:** BI3	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Data Analytics - II	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Data Analytics - II	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:
The track "Business Intelligence" offers a way to start a career in Data Science, Database Management and the like. The students are supposed to be familiar with the basic concepts from probability theory and statistics and the Statistical Programming Language R.

Course content:
The lecture focusses on multivariate statistical methods in the context of Data Science. The main topics are evolutionary optimization and supervised / machine learning. Practical exercises using the statistical Software R are integrated into the lecture and a tutorial.

Themes	Learning objectives
Supervised Learning / Machine Learning	Selected regression and classification approaches
Evolutionary Optimization	Single- and Multiobjective Evolutionary Optimization

5 **Learning outcomes:**

Academic:
The student is supposed to have an understanding of state of the art techniques in Data Science, specifically supervised learning and evolutionary optimization, as well as the ability to choose and implement (in R) an appropriate technique for a given practical task.

Soft skills:
Team work, presentation techniques

6 **Description of possible electives within the modules:**
The module can be taken as part of the track Business Intelligence or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

	No	**Number and Type; Connection to Course**	**Duration**	**Part of final mark in %**
	1	Written Exam (N° 1)	120 min.	60 %
	2	Case study with R software, presentation (N° 2)	Ca 40 Min. (presentation), ca 15 pages	40 %

9	**Study Work:** none
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
	No 2	1.50 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Data Analytics - II
	No 2: Exercise on Data Analytics - II

16	**Responsible Lecturer:** Prof. Dr. Heike Trautmann	**Department:** School of Business and Economics
17	**Misc.:**	

Information Systems Development: Logic Specification and Programming

Module Title english:		Information Systems Development: Logic Specification and Programming			
Course Program:		Master Information Systems			
1	**Module No:** ISD1	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Logic Specification and Programming	Compulsory	30 h (2 CH)	45
2	Exercise	Exercise on Logic Specification and Programming	Compulsory	30 h (2 CH)	75

4 **Module Profile:**

Purpose of the module/integration into curriculum:
It is assumed that the students have some experience with programming and software development as taught in the bachelor program. Depending on the subject of the intended master thesis, the taught material can be helpful.

Course content:
The course consists of lectures providing the theoretical background and of accompanying biweekly exercises.

Themes	Learning objectives
Logics	Expressing the relationships between real-world entities in logic. Knowing how to transform a logic specification into an executable Prolog program.
Prolog	Knowing the features of the logic programming language Prolog, such as Horn-rules, unification, SLD-resolution, backtracking, negation, and cut. Being able to program in Prolog.
Constraint Solving	Expressing real-world relationships as constraints over a suitable domain. Knowing how to solve such constraints using a constraint solver from Prolog.
Business Rules Management Systems	Knowing how to express volatile business logic by rules. Including these rules into a business rules management system (BRMS) such as Drools. Knowing how the BRMS evaluates the rules. Integrating a BRMS into an information system.
Temporal Logics and Model Checking	Expressing temporal relationships by temporal logics such as CTL and LTL. Knowing how to automatically check information systems for compliance with a temporal specification. Being able to apply a model checker to guarantee the correctness of program.

	Datalog and Deductive Databases	Knowing the syntax and semantics of the logic database-query language Datalog. Being able to query deductive databases.

5

Learning outcomes:
Academic:
The students learn to specify complex real-world relationships using logic and to transform such a specification into an executable logic program possibly including constraints or to handle it using model checking.
Soft skills:
The exercises are solved in teams of 3-5 students. Hence, the students get some experience with teamwork.

6

Description of possible electives within the modules:
none

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	120 min.	100 %

9

Study Work:

No	Number and Type; Connection to Course	Duration
1	every two weeks exercise solved in groups	ca 15 pages/exercise, in total ca 120 pages

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	3.00 CP
Study Work	No 1	1.00 CP
Total		6 CP

12

Weight of the module grade for the overall grade:
6/120 (5%)

13

Module Prerequisites:
none

14

Presence:
Presence is strongly recommended to warrant learning success

15

Mobility/Acknowledgement:

	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Logic Specification and Programming
		No 2: Exercise on Logic Specification and Programming
16	**Responsible Lecturer:** Prof. Dr. Herbert Kuchen	**Department:** School of Business and Economics
17	**Misc.:** The module can be taken as part of the track Information Systems Development or as an elective.	

Information Systems Development: Data Integration

Module Title english:	Information Systems Development: Data Integration				
Course Program:	Master Information Systems				
1	**Module No:** ISD2	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Data Integration	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Data Integration	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:

Data Integration is a core requirement for diverse information system development tasks, ranging from Web search and mash-ups to data warehousing and business intelligence. In this course, a collection of tools and techniques is presented that can be applied in modern data integration tasks; these range from view construction and query processing in heterogeneous distributed databases to schema mapping and matching, Web services and mash-up APIs. In this course, lectures are complemented by student presentations that provide additional content. In addition, exercises provide ample opportunities to apply the various techniques in realistic and practical settings.

Course content:

Students will become able to explain the problems, issues, solutions, techniques, and tools relating to data integration. They will be able not only to locate and present relevant sources and research in the area, but also to apply data integration techniques in practical scenarios. Moreover, they will be familiarized with the current research literature in the field.

Themes	Learning objectives
Introduction, Background, Architectures	To discuss the problems, issues, solutions, techniques, and tools relating to data integration
Web Crawling, Search Engines	To discuss and apply integration on the Web as the currently most dominating integration application
Social media analysis, advertising, and recommendation	To discuss and apply techniques for social media analysis, advertising, and recommender systems
Data cleansing, data fusion, data quality	To apply basic activities in data integration
Schema matching, schema mapping	To explain and apply approaches to match and map data between various data sources

	GaV/LaV Modeling	To apply traditional database techniques (in this case queries and views) in the novel context of data integration

5

Learning outcomes:
Academic:
In the oral presentation, the student should demonstrate the ability • to select, engage with, assess, and apply pieces of literature, • to build a concise, yet coherent argument, and • to identify open issues. In the written examination, the student should demonstrate the ability • to integrate and apply several concepts, • to apply the concepts to a data integration scenario.
Soft skills:
Through exercises and presentations, students are able to develop the following soft skills: - Presentation techniques - Team work - Ability to communicate and collaborate - Autonomous working - Time management - Application of theoretical concepts in practical settings

6

Description of possible electives within the modules:
The module can be taken as part of the track Information Systems Development or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written exam (N° 1)	120 min.	60 %
2	Case study exercise with presentation (N° 2)	ca 40 pages, 30 min.	40 %

9

Study Work: none

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
	No 2	1.50 CP
Total		6 CP

12

Weight of the module grade for the overall grade:
6/120 (5%)

13

Module Prerequisites:
Basic database knowledge

14

Presence:
Presence is recommended.

15

Mobility/Acknowledgement:

	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Data Integration
		No 2: Exercise on Data Integration
16	**Responsible Lecturer:** Prof. Dr. Gottfried Vossen	**Department:** School of Business and Economics
17	**Misc.:**	

Information Systems Development: Advanced Concepts in Software Engineering

Module Title english:	Information Systems Development: Advanced Concepts in Software Engineering				
Course Program:	Master Information Systems				
1	**Module No:** ISD3	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Advanced Concepts in Software Engineering	Compulsory	30 h (2 CH)	45
2	Exercise	Exercise on Advanced Concepts in Software Engineering	Compulsory	30 h (2 CH)	75

4 **Module Profile:**

Purpose of the module/integration into curriculum:
It is assumed that the students have some experience with programming and software development as they are taught in the bachelor program. The learned concepts and techniques are (often) helpful in the master thesis.

Course content:
The course consists of lectures providing the theoretical background of topical software-engineering concepts such as enterprise application integration, model-driven software development, web applications, microservices, and container virtualization. Moreover, it consists of 5 assignments where these concepts are applied to develop and connect example information system.

Themes	Learning objectives
Enterprise Application Integration (EAI) concepts	Knowing and being able to evaluate typical EAI topologies and possible integration layers. Knowing corresponding communication paradigms.
Web applications and Middleware	Knowing typical concepts and frameworks for the development of enterprise applications. Being able to use these frameworks for developing enterprise applications.
Web Services	Being able to connect existing enterprise applications using web-service technologies.
Message-oriented Middleware	Being able to connect enterprise applications using message-oriented middleware.
Model-Driven Software Development (MDSD)	Understanding and being able to apply the main concepts of MDSD such as automatically transforming a model to e.g. executable code as well as meta-modeling and domain-specific languages.

	Microservices	Understanding the advantages and disadvantages of microservice architectures.Being able to design resilient and scalable information systems based on microservice architectures.
	Container Virtualization	Knowing recent concepts of operating-system virtualization and being able to apply them.

5

Learning outcomes:
Academic:
The students learn to know and apply current integration technologies for software systems within a company and across collaborating enterprises. Moreover, they learn how to increase the productivity of software development by automatically transforming abstract models to desired artifacts such as executable code. Finally, they learn to know and apply architecture concepts for resilient and scalable information systems.
Soft skills:
The assignments are solved in teams of about 5 students. Thus, the students are trained to collaborate in teams.

6

Description of possible electives within the modules:
none

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written exam (N° 1)	120 min.	70 %
2	Software artifacts(4 parts) in groups (N° 2)	Ca 20 pages/part, 45 code lines/code page	30 %

9

Study Work: none

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
	No 2	1.50 CP
Total		6 CP

12

Weight of the module grade for the overall grade:
6/120 (5%)

13

Module Prerequisites:
none

14	**Presence:** Presence is strongly recommended to warrant learning success	
15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Advanced Concepts in Software Engineering
		No 2: Exercise on Advanced Concepts in Software Engineering
16	**Responsible Lecturer:** Prof. Dr. Herbert Kuchen	**Department:** School of Business and Economics
17	**Misc.:** The module can be taken as part of the track Information Systems Development or as an elective.	

Logistics, Production and Retail: Supply Chain Management

Module Title english:	Logistics, Production and Retail: Supply Chain Management				
Course Program:	Master Information Systems				
1	**Module No:** LPR1	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Supply Chain Management	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Supply Chain Management	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:

Supply chains focus onto value creation networks of often legally independent companies that are tightly connected via different linkages or flows (e.g. material, information and financial flows). The course "Supply Chain Management (SCM)" elaborates those linkages across companies and specifically addresses issues of supply chain design, planning, coordination and optimization. Collaborative process concepts integrating the different business activities of the companies in the supply chain are investigated in detail. For each lectured topic related IT-Systems are introduced and their application in Supply Chain Management is discussed. Furthermore, the different modes of usage and architectures of Information Systems in Supply Chain Management are examined. Case studies carried out with the help of SCM tools currently used in practice underline the practical aspects of the contents taught.

Course content:

The production and retail module studies companies in the context of the intra- and inter-organizational processes of all acting companies in a supply chain. The Supply Chain Management course encompasses topics like the principle tasks of designing, planning, and executing a supply chain under the usage of different modelling approaches and related information systems. It complements the other industry-driven courses of the module (Production Planning and Control, Retail) by introducing general Supply Chain concepts interlinking the activities of retail and production. The adaption of these concepts to specific industry sectors is part of the other courses of the track.

Themes	Learning objectives
Basic Principles of Supply Chain Management	To learn about basic terms, ideas, challenges and targets of Supply Chain Management.
Supply Chain Modeling	To learn about the basic elements to be modeled in a supply chain. To understand the intention and objectives of modeling supply chains and to be able to create such a model.

	Supply Chain Design	To learn about the relevant influencing factors for supply chain design decisions and to understand design options and principles.
	Supply Chain Planning	To understand the core tasks of supply chain planning and the methods being used for demand planning, network planning, supply planning, production planning and distribution planning as well as the objectives and key indicators of order promising.
	Supply Chain Execution	To learn about the scope of supply chain execution. To get a basic understanding of the basic concepts and functions of Supply Chain Event Management.
	IT-Systems in Supply Chain Management	To get an idea of features and characteristics of different SCM software systems.

5

Learning outcomes:
Academic:
The course's major academic outcome is a broad and profound understanding of supply chains' challenges, targets, and related concepts for managing supply chain activities. Furthermore, a profound knowledge in actual methods and concepts of supply chain design, modeling, planning, and optimization should be obtained.
Soft skills:
Students are encouraged to prepare the contents of the lecture and exercise and to perform follow-up work in teams. This is supported by a Learnweb discussion forum that is guided by the chair. Case studies that accompany the lecture especially in Supply Chain Design and Planning provide the opportunity for students to get acquainted to selected SCM tools and to apply them in a realistic scenario. The case studies are organized as group work and thus promote the students' ability to cooperate in teams. The intermediary results are presented regularly by the groups in front of the complete audience. This enhances the students' presentation and discussion skills.

6

Description of possible electives within the modules:
The module can be taken as part of the track Logistics, Production and Retail or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Examinations for every part of the module

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	120 min.	100 %

9

Study Work:

No	Number and Type; Connection to Course	Duration
1	Case Study: Supply Chain Design (in group) and presentation	approx. 40 pages & approx. 30 min.
2	Case Study: Supply Chain Planning (in group) and presentation	approx. 40 pages & approx. 30 min.

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

	No 1	1.00 CP

	Presence	No 2	1.00 CP
	Relevant Work	No 1	2.00 CP
	Study Work	No 1	1.00 CP
		No 2	1.00 CP
	Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success

15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Supply Chain Management
		No 2: Exercise on Supply Chain Management

16	**Responsible Lecturer:** Prof. Dr.-Ing. Bernd Hellingrath	**Department:** School of Business and Economics
17	**Misc.:**	

Logistics, Production and Retail: Production Planning and Control

Module Title english:	Logistics, Production and Retail: Production Planning and Control				
Course Program:	Master Information Systems				
1	**Module No:** LPR2	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3

Module Structure:

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Production Planning and Control	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Production Planning and Control	Compulsory	30 h (2 CH)	60

4

Module Profile:

Purpose of the module/integration into curriculum:

In the "Production Planning and Control" (PPC) course the process and data modeling concepts are adapted to the manufacturing sector. An integrated perspective is taken within the course by presenting processes, functions, data structures and information flows relevant to this domain. Furthermore, the potential of current data analytics approaches is discussed while taking a business process management perspective. The PPC course is complementary to the courses "Retail" and "Supply Chain Management".

Course content:

The students gain a comprehensive overview of typical tasks in production planning and control, such as product offering planning, product costing, demand forecasting, materials requirements planning, production scheduling, and inventory and capacity management. Moreover, the students learn to apply the methods and techniques to perform these tasks. Additionally, the students learn about current trends and issues in PPC and how to assess them critically.

Themes	Learning objectives
Production Planning	To understand and be able to apply the concepts related to demand management, materials requirements planning, inventory control and capacity management.
Production Control	To understand and be able to apply the concepts related to production control.
IT Systems for PPC	To understand how IT (Information Technology) systems can support production planning and control and to gain hands-on experience with an Enterprise Resource Planning (ERP) system.
Data Modeling in PPC	To understand the underlying data structures and information requirements in production planning and control.
Smart Manufacturing	To understand how innovative technologies and services influence production processes and how the results of data analytics can be interpreted in the context of production planning and control.

5

Learning outcomes:

Academic:

	The students understand the PPC processes and how information systems support them. They understand the cross-departmental integration of processes and data structures. They deepen their knowledge in process and data modeling. They are able to apply the methods and techniques to perform various PPC tasks. **Soft skills:** The exercises comprise both individual work and team-based group work. The students apply and improve their capabilities in group work, presentation and discussion.
6	**Description of possible electives within the modules:** The module can be taken as part of the track Logistics, Production and Retail or as an elective. Within the electives a minimum of 2 seminars has to be taken.
7	**Examination:** Final Module Exam
8	**Relevant Work:** **No** | **Number and Type; Connection to Course** | **Duration** | **Part of final mark in %** 1 | Final Written Exam | 120 min. | 100 %
9	**Study Work:** **No** | **Number and Type; Connection to Course** | **Duration** 1 | Case study work (in groups, presentation and written submission) | 30 min., 5 pages
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.
11	**CP Assignment:** **Presence** | No 1 | 1.00 CP **Presence** | No 2 | 1.00 CP **Relevant Work** | No 1 | 3.00 CP **Study Work** | No 1 | 1.00 CP **Total** | | 6 CP
12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success
15	**Mobility/Acknowledgement:** **Use of the module for other course programs** | Master Business Administration, Master Information Systems **English translation of module components from section 3** | No 1: Production Planning and Control **English translation of module components from section 3** | No 2: Exercise on Production Planning and Control
16	**Responsible Lecturer:** Prof. Dr. Dr. h.c. Dr. h.c. Jörg Becker **Department:** School of Business and Economics

17	**Misc.:**

Logistics, Production and Retail: Retail

Module Title english:	Logistics, Production and Retail: Retail				
Course Program:	Master Information Systems				
1	**Module No:** LPR3	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Retail	Compulsory	30 h (2 CH)	60
2	Lecture	Exercise on Retail	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Purpose of the module/integration into curriculum:
The course is complementary to the courses Production Planning and Control and Supply Chain Management and Logistics.

Course content:
The retail course as part of the production and retail module presents retail as an important sector for the economy. It uses reference models for retail as a framework to introduce retail business processes and data structures. To highlight the integration of business processes and information technology, the ERP system selection and implementation process is elaborated. The introduction of retail analytics and omni channel retailing represents the ongoing evolution of the retail sector to the digital age. Process and data modeling techniques are applied throughout the lecture and accompanying exercises.

Themes	Learning objectives
Business Processes in Retail	The students get to know reference models for retail. They understand core processes, coordination processes, support processes and their integration.
Process Modeling	The students are able to model business processes in retail, especially with the help of domain specific, semantic modeling languages.
Data Modeling	The students are able to model data structures and get to know selected data models in retail.
ERP-Systems for Retail	The students understand the importance of ERP-systems in retail and their selection and implementation process.
Smart Retail	The students get to know recent developments in the retail sector (e.g. retail analytics). They learn how these developments can be used to enhance existing or create new business models.

5

Learning outcomes:
Academic:
The students recognize information systems and the underlying business processes in retail as an important sector for the economy. They understand the cross-departmental integration of business processes and how retail companies are embedded in the value chain. They deepen their knowledge in process and data modeling and are able to apply methods and techniques in various application scenarios. Additionally, the students understand how the retail sector has and is continuously changing and which benefits arise from these changes.
Soft skills:
The exercises comprise both individual work and team-based group work. The students apply and improve their capabilities in team work, presentation and discussion.

6

Description of possible electives within the modules:
The module can be taken as part of the track Logistics, Production and Retail or as an elective. Within the electives a minimum of 2 seminars has to be taken.

7

Examination: Final Module Exam

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	120 min.	100 %

9

Study Work:

No	Number and Type; Connection to Course	Duration
1	Case study work (in groups, presentation and written submission)	30 minutes & 5 pages
2	Guest lecture summary (in groups, presentation)	5 minutes

10

Prerequisites for Credit Points:
The credit points will be granted after all relevant work and study work have been successfully completed.

11

CP Assignment:

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	2.50 CP
Study Work	No 1	2.00 CP
	No 2	0.50 CP
Total		7 CP

12

Weight of the module grade for the overall grade:
6/120 (5%)

13

Module Prerequisites:
none

14

Presence:
Presence is highly recommended.

15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Business Administration, Master Information Systems
	English translation of module components from section 3	No 1: Retail
		No 2: Exercise on Retail
16	**Responsible Lecturer:** Prof. Dr. Dr. h.c. Dr. h.c. Jörg Becker	**Department:** School of Business and Economics
17	**Misc.:**	

Innovation Management

Module Title english:	Innovation Management				
Course Program:	Master Information Systems				
1	**Module No:** MCM05	**State:** Compulsory	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Innovation Management	Compulsory	30 h (2 CH)	60
2	Exercise	Tutorial Innovation Management	Compulsory	30 h (2 CH)	60

4

Module Profile:

Purpose of the module/integration into curriculum:

This course teaches how to create value through products and services (value equity) by (technology-driven) innovation in both entrepreneurial and established firms. We examine innovation-based strategies as a source of competitive advantage and then examine how to build organizations that excel at identifying, building and commercializing technological innovations. The course examines how entrepreneurs can shape their firms so that they continuously build and commercialize valuable innovations. Many of the examples also focus on how established firms can become more entrepreneurial in their approach to innovation.

Course content:

Main topics:

- Innovation process
- Creating an organizational environment that rewards innovation and entrepreneurship
- Internal and external sources of innovation
- Structuring entrepreneurial and established organizations for effective innovation

Course objective: It is the objective of this course that students learn the main issues in innovation management in order to successfully create value through products and services (value equity) in both entrepreneurial and established firms.

5

Learning outcomes:

Academic:

After following this course, you are able to…

- Discuss current topics in strategic innovation management,
- Understand the innovation process, several organizational structures to foster innovations, and the challenges of innovation in large and small firms,
- Apply these concepts directly to real world situations.

Soft skills:

- Case discussions improve your problem-solving skills.
- Critical discussion of research allows you improving your argumentation and communication skills.
- The group work helps you to improve your collaboration and presentation skills.

6 **Description of possible electives within the modules:**
none

7 **Examination:** Final module exam

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written report (group work when indicated)	maximum of 50 pages	100 %

9 **Study Work:**

No	Number and Type; Connection to Course	Duration
1	none	

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	4.00 CP
Study Work	No 1	-
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success.

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration
English translation of module components from section 3	No 1: Innovation Management
	No 2: Tutorial Innovation Management

16 **Responsible Lecturer:**
Professor Dr. Thorsten Wiesel

Department:
University of Münster, School of Business and Economics

17 **Misc.:**

Customer Relationship Management and Direct Markteting

Module Title english:	Customer Relationship Management and Direct Markteting				
Course Program:	Master Information Systems				
1	**Module No:** MCM07	**State:** Compulsory	**Language of Instruction:** English		
2	**Turn:** each winter semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Customer Relationship Management	Compulsory	30 h (2 CH)	60
2	Exercise	Tutorial on Customer Relationship Management and Direct Marketing	Compulsory	30 h (2 CH)	60

4 **Module Profile:**

Course content:

This course focuses on how companies can design and influence customer relationships and thereby acquire relationship equity. Therefore, the conceptual and methodical foundations of customer relationship management (CRM) and direct marketing are introduced. The students will obtain a broad overview of the planning, implementation, and integration of various direct marketing media. Moreover, the application of modern market research tools in the field of CRM and direct marketing are discussed. Further emphasis is placed on value-oriented planning and optimization of direct marketing activities and the monitoring of its success.

Main topics: The course will cover the following topics:

- Introduction to foundations of CRM and direct marketing
- Characteristics of direct marketing media
- Interplay of customer relationship management and direct marketing
- Value orientation of direct marketing
- Direct marketing controlling and accountability

Course objective: The lecture aims to provide students with an advanced understanding of customer relationship management and direct marketing. Thereby, the lecture covers the opportunities and challenges of both topics in a data driven company.

5 **Learning outcomes:**

Academic:

- Students are able to value customers with different approaches (Customer Lifetime Value (CLV), Recency, Frequency, Monetary Value (RFM))
- Students are able to plan and execute direct marketing campaigns
- Students learn how to handle the data available in companies (legal, methodological, strategic)

Soft skills:

- Cooperation and teamwork: part of the assignments is done via group work
- Presentation skills: assignments have to be presented in front of the class
- Communication skills: tutorials include discussion sessions

6 **Description of possible electives within the modules:**

none

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Written assignments and presentations (in group) (N° 2)	1 x 5 pages, 1 x 15 pages, 2 x 20 min.	33 %
2	Written exam (N° 1)	90 min.	67 %

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	1.50 CP
	No 2	2.50 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success.

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration
English translation of module components from section 3	No 1: Customer Relationship Management
	No 2: Tutorial on Customer Relationship Management and Direct Marketing

16 **Responsible Lecturer:**
Professor Dr. Manfred Krafft

Department:
School of Business and Economics

17 **Misc.:**

Channel Management

Module Title english:	Channel Management				
Course Program:	Master Information Systems				
1	**Module No:** MCM09	**State:** Compulsory	**Language of Instruction:** English		
2	**Turn:** each summer semester	**Duration:** 1 semester	**Semester:** 1 or 2	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture + Exercise	Channel Management	Compulsory	60 h (4 CH)	120

4 **Module Profile:**

Purpose of the module/integration into curriculum:

This course teaches the fundamentals of an integrated channel management covering communication and distribution channels. Next to strategic aspects of an integrated channel management, we discuss challenges in coordinating multiple channels of communication and distribution. We discuss how channel design and coordination affect firm performance.

Course content:

Main topics:

- Challenges of integrated channel management
- Effectiveness of communication and distribution channels along the customer journey

Course objective: It is the objective of this course to enable students to elaborate on the concept of integrated channel management and to discuss the impact of channels on customer behavior and firm performnace.

5 **Learning outcomes:**

Academic:

After following the course, you are able to

- Elaborate on the concept of integrated channel management,
- Discuss how firms can create value through an integrated channel management,
- Discuss the impact of channels on customer behavior and critical KPIs.

Soft skills:

- Discussions in class improve your problem-solving skills.
- Critical discussion of research allows students improving their argumentation and communication skills.
- - The group work helps students to improve their collaboration and presentation skills.

6 **Description of possible electives within the modules:**
none

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %

	1	Written assignments and presentations (in group) (N° 2)	2 x 10 pages and und 1 x 15 min.	33 %
	2	Written exam (N° 1)	90 min.	67 %

9	**Study Work:** none
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	2.00 CP
Relevant Work	No 1	1.50 CP
	No 2	2.50 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success.

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Business Administration, Master Information Systems
English translation of module components from section 3	No 1: Channel Management

16	**Responsible Lecturer:** Dr. Sonja Gensler-Wiesel	**Department:** School of Business and Economics
17	**Misc.:**	

Elective Modules (Seminar)

Module Title english:	Elective Modules (Seminar)				
Course Program:	Master Information Systems				
1	**Module No:** EMSem1-6	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each semester	**Duration:** 1 semester	**Semester:** 1 or 2 or 3 or 4	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Seminar	Elective Modules	Compulsory	60 h (4 CH)	120

4 **Module Profile:**

Purpose of the module/integration into curriculum:
Usually, the topics deepen the contents of one (or more) of the tracks IM, PM, BN, BI, ISD and LPR. Therefore, knowledge of the contents of pertaining track(s) is strongly recommended.

Course content:
The elective seminars deal with topics that arise from recent research. They are usually organized in small groups of students. Each student gives a seminar talk and, to this end, writes a seminar elaboration. Main seminar-topics may change from term to term. To follow recent developments, the topics and, accordingly, the learning objectives are changing from term to term. Examples of earlier topics have been:

- Structural Model Analysis
- Model Visualisation - Layout and Perception
- Network Evolution
- Beautiful Data
- ERP systems in industry, retail and supply chains
- Information Retrieval
- Coordination in Supply Chain Management
- Theoretical Computer Science

5 **Learning outcomes:**

Academic:
The students deepen their knowledge in specific topics.

Soft skills:
Students improve their skills in acquiring profound scientific knowledge and presentation. Depending on the topic, group working abilities are supported.

6 **Description of possible electives within the modules:**
Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %

	1	Seminar elaboration (academic paper) and presentation	Ca 20 pages, ca 60 minutes	100 %

9	**Study Work:** none
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	2.00 CP
Relevant Work	No 1	4.00 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Information Systems
English translation of module components from section 3	No 1: Elective Modules

16	**Responsible Lecturer:** Prof. Dr. Stefan Klein	**Department:** School of Business and Economics
17	**Misc.:**	

Selected Chapters in Information Systems

Module Title english:	Selected Chapters in Information Systems				
Course Program:	Master Information Systems				
1	**Module No:** SCIS 1 - 5	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** irregularly	**Duration:** 1 semester	**Semester:** 1 or 2 or 3	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture (with integrade exercises)	Lecture "Selected Chapters in IS"	Compulsory	60 h (4 CH)	120

4 **Module Profile:**
Course content:
An actual or classical topic extending to the "Methods" or to the "Domains" of Information Systems or being located in the border areas of Information Systems and Computer Science/Mathematics/Business Administration. This Module integrates lectures which are offered only once or at irregular intervals, e.g., by guest lecturers or by other lecturers who are members of the institute only for a limited time. Contents of the lecture are announced in the (electronic) university calendar and are usually introduced during the seminar-presentation which takes place in the preceding term.

5 **Learning outcomes:**
Academic:
The students gain deepened insight into a special topic of Information Systems. They can apply techniques associated with the topic to specific problem settings.
Soft skills:
The students learn to work with specific scientific literature.

6 **Description of possible electives within the modules:**
Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Final Module Exam

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	up to 120 min.	100 %

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	2.00 CP
Relevant Work	No 1	4.00 CP
Total		6 CP

12 **Weight of the module grade for the overall grade:**
6/120 (5%)

13 **Module Prerequisites:**
none

14 **Presence:**
Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Information Systems
English translation of module components from section 3	No 1: Lecture “Selected Chapters in IS”
	No 2: Exercise “Selected Chapters in IS”

16 **Responsible Lecturer:**
Prof. Dr. Dr. h.c. Dr. h.c. Jörg Becker, Prof. Dr.-Ing. Bernd Hellingrath, Prof. Dr. Stefan Klein, Prof. Dr. Herbert Kuchen, Prof. Dr. Heike Trautmann, Prof. Dr. Gottfried Vossen

Department:
University of Münster School of Business and Economics

17 **Misc.:**

Selected Chapters in Business Administration

Module Title english:	Selected Chapters in Business Administration				
Course Program:	Master Information Systems				
1	**Module No:** EM-SCBA	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each semester	**Duration:** 1 semester	**Semester:** 1 or 2 or 3 or 4	**CP:** 6	**Workload (h):** 180

3

Module Structure:

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture	Selected Chapters in Business Administration Concerning the specific modules see module descriptions for the Master of Business Administration	Compulsory	30 h (2 CH)	60
2	Exercise	Exercise on Selected Chapters in Business Administration Concerning the specific modules see module descriptions for the Master of Business Administration	Compulsory	30 h (2 CH)	60

4

Module Profile:

Purpose of the module/integration into curriculum:

to be found in the descriptions of the modules mentioned below.

Course content:

Choosing a 6CP Lecture with Exercises in the "Minor" programs of the Master program of Business Administration offered by the department of Business Administration, namely: "Basis Accounting", "Basis Finance", "Basis Management" and "Basis Marketing". In particular, the following Modules can be studied:

ACM01 Strategic Management Accounting
ACM02 Financial Accounting
ACM03 Internationale Unternehmensbesteuerung
ACM04 Internationales Controlling
ACM07 Unternehmensanalyse und –bewertung
ACM08 Unternehmensbesteuerung I
ACM09 Ausgewählte Kapitel des Accounting
ACM10 Abschlussprüfung
ACM11 Spezialfragen der Rechnungslegung nach HGB und IFRS
ACM12 Ausgewählte Kapitel des Accounting II
ACM13 Anwendungen des Controlling
ACM14 IFRS und Controlling
ACM16 Vertiefungsmodul Internationale Rechnungslegung
ACM17 Unternehmensbesteuerung II
FCM01 Introduction to Finance
FCM02 Behavioral Finance
FCM03 Derivatives I

FCM04 Finanzintermeidation I
FCM05 Advanced Corporate Finance
FCM06 Corporate Governance and Responsible Business Practices
FCM07 Derivatives II
FCM08 Finanzintermediation II
FCM13 Ausgewählte Kapitel Finance I
CfM13 Organisation
CfM14 Strategisches Management
CfM15 Personal
CfM16 Management
MCM02 Industrial Marketing
MCM03 Consumer Marketing
MCM04 Media Marketing
MCM08 Direct Marketing
MCM09 Sales Management
MCM10 Electronic Commerce
MCM11 Advanced Media Marketing
Course content can be found in the descriptions of the above mentioned modules.
Preconditions defined for the selected modules have to be obeyed.

5 **Learning outcomes:**
Academic:
To be found in the descriptions of the above mentioned modules
Soft skills:
To be found in the descriptions of the above mentioned modules

6 **Description of possible electives within the modules:**
Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Examinations for every part of the module

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	See module descriptions within the Master program of the department of Business Administration		

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	1.00 CP
	No 2	1.00 CP
Relevant Work	No 1	4.00 CP
Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)	
13	**Module Prerequisites:** none	
14	**Presence:** Presence is strongly recommended to warrant learning success	
15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Information Systems
	English translation of module components from section 3	No 1: Selected Chapters in Business Administration
		No 2: Exercise on Selected Chapters in Business Administration
16	**Responsible Lecturer:** Prof. Dr. Heike Trautmann	**Department:** School of Business and Economics
17	**Misc.:**	

Selected Chapters in Computer Science

Module Title english:	Selected Chapters in Computer Science				
Course Program:	Master Information Systems				
1	**Module No:** SCCS 1-5	**State:** Elective	**Language of Instruction:** English		
2	**Turn:** each semester	**Duration:** 1 semester	**Semester:** 1 or 2 or 3 or 4	**CP:** 6	**Workload (h):** 180

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Lecture (with integrated exercises	Selected Chapters in Computer Science	Compulsory	60 h (4 CH)	120

4 **Module Profile:**
Purpose of the module/integration into curriculum:
Course content can be found in the descriptions of the modules mentioned below.
Course content:
Choosing Lecture + Exercise-modules with 6 CP from the Master program of the department of Computer Science. Course content can be found in the descriptions of the above mentioned modules.

5 **Learning outcomes:**
Academic:
to be found in the descriptions of the above mentioned modules
Soft skills:
to be found in the descriptions of the above mentioned modules

6 **Description of possible electives within the modules:**
Within the electives a minimum of 2 seminars has to be taken.

7 **Examination:** Final Module Exam

8 **Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Final written exam	120 min.	100 %

9 **Study Work:** none

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	2.00 CP

	Relevant Work	No 1	4.00 CP
	Total		6 CP

12	**Weight of the module grade for the overall grade:** 6/120 (5%)
13	**Module Prerequisites:** none
14	**Presence:** Presence is strongly recommended to warrant learning success

15	**Mobility/Acknowledgement:**	
	Use of the module for other course programs	Master Information Systems
	English translation of module components from section 3	No 1: Selected Chapters in Computer Science
		No 2: Exercise on Selected Chapters in Computer Science

16	**Responsible Lecturer:** Prof. Dr. Heike Trautmann	**Department:** School of Business and Economics
17	**Misc.:**	

Project Seminar (Master of Science Information Systems)

Module Title english:	Project Seminar (Master of Science Information Systems)				
Course Program:	Master Information Systems				
1	**Module No:** PS	**State:** Compulsory	**Language of Instruction:** English		
2	**Turn:** each semester	**Duration:** 1 semester	**Semester:** 3 or 4	**CP:** 12	**Workload (h):** 360

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1	Project Seminar	Project Seminar	Compulsory	120 h (8 CH)	240

4 **Module Profile:**

Purpose of the module/integration into curriculum:
The material and methods that were introduced in former Tracks IM, PM, BN, BI, ISD and/or LPR will be applied in a practice-oriented project to solve a realistic, complex problem. The project is often performed in collaboration with a partner from industry. The experience gained in the project seminar can be helpful for the Master thesis.

Course content:
The material and methods learned in previous courses are applied in a practice-oriented project with topics varying from term to term. In particular teamwork, project planning and management, development of a business concept, design of a corresponding software architecture, implementation, and testing will be trained. Moreover, the intermediate and final results of the project will be presented using state-of-theart tools. The participants also have to read relevant literature and describe required concepts in papers. The students are supported in all these activities by tutors.

Themes	Learning objectives
Writing scientific papers	Read and understand scientific literature. Describe the read material well-structured, understandably, and precisely in own words in a paper
Presentation	Present the material described in the paper orally using state-of-the-art tools (such as e.g. Powerpoint) in a well-structured, understandable, and precise way.
Project work	Solve a realistic task in a project team.
Project management	Manage a project taking into account limited time and resources. Divide a complex task into activities and assign them to team members. Coordinate the activities in the project.

5 **Learning outcomes:**

Academic:
The students learn to apply theoretical concepts in a practical environment given by a specific (e.g. industrial) project.

Soft skills:

	Students learn to realize a project in a team. They acquire several soft skills, e.g. in presentations, writing of scientific texts, and collaboration in teams as well as media competence.
6	**Description of possible electives within the modules:** none
7	**Examination:** Final Module Exam
8	**Relevant Work:**

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Portfolio: Project documentation, seminar thesis, and - following documentation and thesis - 2 intermediate and 1 final presentation	30 pages, ca 20 pages, ca. 90 min	100 %

9	**Study Work:** none
10	**Prerequisites for Credit Points:** The credit points will be granted after all relevant work and study work have been successfully completed.
11	**CP Assignment:**

Presence	No 1	4.00 CP
Relevant Work	No 1	8.00 CP
Total		12 CP

12	**Weight of the module grade for the overall grade:** 12/120 (10%)
13	**Module Prerequisites:** Concrete Project Seminars may require certain modules from IM, PM, BN, ISD, BI and/or LPR.
14	**Presence:** Presence is strongly recommended to warrant learning success during project work and is required during presentations. As the required work can only be assessed, when all participants are present during presentations, an absence is not possible. If absent, the seminar has to be repeated.
15	**Mobility/Acknowledgement:**

Use of the module for other course programs	Master Information Systems
English translation of module components from section 3	No 1: Project Seminar

16	**Responsible Lecturer:** Prof. Dr. Heike Trautmann	**Department:** School of Business and Economics
17	**Misc.:**	

Master's Thesis

Module Title english:	Master's Thesis				
Course Program:	Master Information Systems				
1	**Module No:** MT	**State:** Compulsory	**Language of Instruction:** English		
2	**Turn:** each semester	**Duration:** 1 semester	**Semester:** 3 or 4	**CP:** 30	**Workload (h):** 900

3 **Module Structure:**

No	Type	Course	State	Workload (h)	
				Presence (h + CH)	**Self-Study (h)**
1		Writing the thesis	Compulsory	0 h (0 CH)	750
2		Thesis defense	Compulsory	0 h (0 CH)	60
3	Exercise	Research methods	Compulsory	30 h (2 CH)	60

4

Module Contents:

Purpose of the module/integration into curriculum:

The master thesis is written in the research context of one of the method tracks IM, PM, BN, BI and/or ISD.

Course content:

Those are subject to the topic and area where the thesis is intended. The thesis defense covers the thesis' topic. With his/her master's thesis, a student is supposed to prove his/her ability to take part in the scientific process by doing a small piece of research and write an appropriate paper on it. The thesis should have a length of approximately 80 pages. The thesis defense contains a presentation of the thesis' contents as well as a discussion.

5

Learning outcomes:

Academic:

The student can handle a research topic in a scientific way and apply the results to practical problems. He or she can present and defend approaches, underlying theory and results.

Soft skills:

The student can handle the formal requirements associated to a research paper: investigating the research context, collecting material from the scientific literature, performing and processing bibliographical inquiries, presenting own ideas in the scientific environment of the given topic.

6 **Description of possible electives within the modules:**
none

7 **Examination:** Final Module Exam

8

Relevant Work:

No	Number and Type; Connection to Course	Duration	Part of final mark in %
1	Master´s thesis		100 %

9 **Study Work:**

No	Number and Type; Connection to Course	Duration
1	Thesis defense (oral)	max. 1h

10 **Prerequisites for Credit Points:**
The credit points will be granted after all relevant work and study work have been successfully completed.

11 **CP Assignment:**

Presence	No 1	0.00 CP
	No 2	0.00 CP
	No 3	1.00 CP
Relevant Work	No 1	27.00 CP
Study Work	No 1	2.00 CP
Total		30 CP

12 **Weight of the module grade for the overall grade:**
30/120 (25%)

13 **Module Prerequisites:**
60 credit points.

14 **Presence:**
Presence is strongly recommended to warrant learning success

15 **Mobility/Acknowledgement:**

Use of the module for other course programs	Master Information Systems
English translation of module components from section 3	No 1: Writing the thesis
	No 2: Thesis defense
	No 3: Research methods

16 **Responsible Lecturer:**
Prof. Dr. Heike Trautmann

Department:
School of Business and Economics

17 **Misc.:**