



WESTFÄLISCHE
WILHELMS-UNIVERSITÄT
MÜNSTER

Module Descriptions

for the Bachelor of Science in Information Systems
at the University of Münster
from Oct. 14th 2010 in the version from Oct. 29th 2014
Unofficial translation

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Study Plan

	IS	Computer Science	QM	Business Administration	Else
1. Term	Introduction to IS	Programming	Mathematics for IS	Foundations of Business Administration	
2. Term	Data Management	Data Structure and Algorithms	Operations Research	Foundations of Accounting	
3. Term	Process Management and Application Systems	Software Engineering	Data and Probability	Operations Management	Introduction to Economics for IS
4. Term	Project Management	Computer Structures and Operating Systems	Data Analysis and Simulation		
	Communication and Collaboration Systems				
5. Term	Electronic Business			Foundations of Marketing	IT-Law
5./6. Term	Project Seminar				
	2 Specializations				
6. Term	Bachelor Thesis				

Introduction to Information Systems

Module Title english:		Introduction to Information Systems				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: WI 1	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 1	CP: 3	Workload (h): 90	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Lecture Series	2	20 h (1 CH)	40
	2	Course	Introduction to Information Systems	1	10 h (0 CH)	20
4	Module Contents:					
	Background and relations to other courses:					
	This lectures serves as introduction to the Information Systems discipline. Each of the representatives of the IS department introduces into his or her specific field of information systems, its methods, and understandings. This lecture series is guided by an accompanying lecture, connecting them. Additionally, representatives of the study administrations get the opportunity to present their services.					
	Main topics and learning objectives:					
	The main goal of the lecture is the provision of an overview of the multitude of topics of the IS discipline for students. This includes first insights into the core discipline, informatics, and quantitative methods. This overview helps the students to get first impressions of the field's width and supports them in identifying their fields of interest. This, in turn, provides them with guidance throughout their bachelor studies and should give them first ideas on their choice for, e.g., electives. Additionally, graduates from the IS department are regularly invited to present what they are doing since they left University. This should provide the students with a long term perspective and stimulate them to think about their specific expectations on the studies. Finally, a mock exam provides the student with first impressions on how exams are being conducted at the department.					
	Themes		Learning objectives			
	Methods of Information Systems					
	Data- and Process Management					
	Application Systems					
	Quantitative Methods in Logistics					
Inter organizational Information Systems						
IT Security						
Software Engineering						
Unified Communication & Collaboration						

5	<p>Learning outcomes: Academic: The competencies gained in this lecture support students to find orientation at the beginning of their bachelor studies. Soft skills: Driven by its structure, this lecture series expects the student to structure the content of eight different and partly heterogeneous topics to pass the exam. This structured way of approaching a given task is an essential requirement for IS graduates.</p>																				
6	<p>Description of possible electives within the modules: none</p>																				
7	<p>Examination: Examinations for every part of the module</p>																				
8	<table border="1"> <thead> <tr> <th colspan="3" data-bbox="196 656 1460 689">Relevant Work:</th> </tr> <tr> <th data-bbox="196 696 879 730">Number and Type; Connection to Course</th> <th data-bbox="879 696 1121 730">Duration</th> <th data-bbox="1121 696 1460 730">Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td data-bbox="196 752 879 786">Excursion resp. essay</td> <td data-bbox="879 752 1121 786">1 Day / 5 pages</td> <td data-bbox="1121 752 1460 786">19.5 %</td> </tr> <tr> <td data-bbox="196 804 879 837">Mid-term presentation</td> <td data-bbox="879 804 1121 837">10 min.</td> <td data-bbox="1121 804 1460 837">20.5 %</td> </tr> <tr> <td data-bbox="196 855 879 889">Final presentation</td> <td data-bbox="879 855 1121 889">10 min.</td> <td data-bbox="1121 855 1460 889">20 %</td> </tr> <tr> <td data-bbox="196 907 879 940">Project documentation</td> <td data-bbox="879 907 1121 940">~25 Pages</td> <td data-bbox="1121 907 1460 940">40 %</td> </tr> </tbody> </table>			Relevant Work:			Number and Type; Connection to Course	Duration	Part of final mark in %	Excursion resp. essay	1 Day / 5 pages	19.5 %	Mid-term presentation	10 min.	20.5 %	Final presentation	10 min.	20 %	Project documentation	~25 Pages	40 %
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none																					
10	<p>Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.</p>																				
11	<p>Weight of the module grade for the overall grade: 1.67% (3 of 180 CP)</p>																				
12	<p>Module Prerequisites: none</p>																				
13	<p>Presence: Highly recommended</p>																				
14	<p>Use of the module for other course programs: Bachelor Information Systems</p>																				
15	<p>Responsible Lecturer: Dr. Katrin Bergener, Dr. Armin Stein</p>	<p>Department: Münster School of Business and Economics</p>																			
16	<p>Misc.:</p>																				

Programming

Module Title english:		Programming				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: Inf 1	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 1	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Programming	4	60 h (4 CH)	60
	2	Exercise	Exercises on Programming	5	30 h (2 CH)	120
4	Module Contents:					
	Background and relations to other courses:					
	<p>This course introduces the main concepts of programming languages and programming techniques. The students not only get a theoretical understanding of the concepts but also gain practical programming skills through the exercises. There are no prerequisites for this course. The conveyed programming skills are required in several other courses such as e.g. software engineering. Moreover, they are needed in the project seminar and (in many cases) for the bachelor thesis.</p>					
	Main topics and learning objectives:					
<p>The course covers object oriented programming in Java as well as declarative programming in (e.g.) Haskell. Moreover, the syntax and operational semantics of these languages is formally described. In detail the following topics are explained: overview of programming languages landscape; Java: objects, classes, methods, attributes, variables, class diagrams, visibility, types, statements, expressions, method calls, recursion, arrays, inheritance, late binding, interfaces, graphical user interfaces, frameworks (e.g. Swing), inner classes, exception handling, generics, wrapping of basic values, enumeration types, JUnit, file handling, garbage collection, applets, threads, synchronization, general programming principles, stepwise refinement; Haskell: algebraic data types, pattern matching, type inference, higher-order functions, Currying, lazy evaluation; operational semantics: strict vs. non-strict operations, program translation, intermediate code. The goal is that the students learn the main programming concepts and programming techniques and that they get some programming experience through the accompanying exercises.</p>						
Themes		Learning objectives				
Concepts of programming languages		To understand these concepts and to be able to apply them appropriately in practical software development.				
Programming techniques		To understand the techniques and to be able to apply them appropriately in practical software development. To be able to transform a textual specification of a small program or module into a running implementation. To get some first experience with team work.				
Semantics of programming languages		To deepen the understanding of the programming concepts and to get used to and appreciate formal methods.				

5	Learning outcomes: Academic: Students shall master the programming in the small, i.e. the implementation of a specification of a program or module. Soft skills: In the exercises the students cooperate in small groups of students (e.g. 3). This strengthens their ability to work in a team.											
6	Description of possible electives within the modules: none											
7	Examination: Examinations for every part of the module											
8	<table border="1"> <thead> <tr> <th data-bbox="177 600 874 705">Relevant Work: Number and Type; Connection to Course</th> <th data-bbox="874 600 1118 705">Duration</th> <th data-bbox="1118 600 1476 705">Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td data-bbox="177 705 874 792">Exercises</td> <td data-bbox="874 705 1118 792">12 x approx. 5 pages</td> <td data-bbox="1118 705 1476 792">20 %</td> </tr> <tr> <td data-bbox="177 792 874 864">Written exam</td> <td data-bbox="874 792 1118 864">120 min.</td> <td data-bbox="1118 792 1476 864">80 %</td> </tr> </tbody> </table>			Relevant Work: Number and Type; Connection to Course	Duration	Part of final mark in %	Exercises	12 x approx. 5 pages	20 %	Written exam	120 min.	80 %
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.											
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)											
12	Module Prerequisites: none											
13	Presence: strongly recommended											
14	Use of the module for other course programs: Bachelor Information Systems											
15	Responsible Lecturer: Prof. Dr. Herbert Kuchen	Department: School of Business and Economics										
16	Misc.:											

Mathematics for IS

Module Title english:		Mathematics for IS				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: QM 1	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 1	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course / Exercise	Mathematics for Economists (lecture and tutorial)	6	75 h (5 CH)	105
	2	Exercise	Mathematics Adjustment course	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	Mathematics are fundamental in every kind of quantitative study of business and economics. Mathematical skills are essentially needed, e.g., in Statistics, Operations Management and Finance. There are no prerequisites except a thorough knowledge of school mathematics, in particular differential and integral calculus for functions of one variable (which, however, will be briefly repeated in the Adjustment course). The tutorial offers all students the opportunity to work on the lecture-topics in small groups guided by experienced students.					
	Main topics and learning objectives:					
	Themes	Learning objectives				
	Calculus in one variable	To refresh and adapt school knowledge of functions of one variable, in particular differential and integral calculus. To apply this knowledge to introductory quantitative economical questions.				
	Systems of Linear Equations	To understand how to translate linear dependencies between economical variables into systems of linear equations and how to solve them. To find optimal solutions.				
Vectors and Operations with Vectors	To learn how to mathematize economic profiles by means of vectors and how to do and interpret elementary operations with vectors, such as linear combinations and projections.					
Matrices and Operations with Matrices	To use matrices as mathematical models of linear economical mappings between groups of economical variables. To do basic operations such as products of matrices, matrix inverses, determinants and eigenvalues of matrices and to understand how these operations are used in quantitative economics.					
Series	To characterize economical series by means of implicit and explicit formulas. To sum up finite and infinite series. To understand the interrelation between power series and functions of one variable. To make use of the geometric series in financial mathematics.					
Differential Calculus	To understand how functions of several variables are used in quantitative economics. To learn the role of partial/directed/total derivatives as tools describing					

		variational properties of those functions. To use implicit derivatives. To understand the interrelation between curvature of functions and their second-order-derivatives									
	Nonlinear Optimization	To use derivatives of functions in optimization of economically motivated differentiable functions. To understand the treatment of differentiable restrictions in optimization (Lagrange-method). Finally, to investigate the influence of exogenous variables on the optimal solution.									
5	<p>Learning outcomes:</p> <p>Academic: the student should demonstrate the ability * to do mathematical calculations such as optimizations and solutions of economical equations which are necessary in further economical analyses. * to mathematize economical problems, that is find mathematical structure in those problems</p> <p>Soft skills: Reading and understanding formal texts (like mathematical formulas in economics), Working in small groups (self study) in order to solve mathematical problems, Presentation Skills (when visiting the tutorial)</p>										
6	Description of possible electives within the modules: none										
7	Examination: Final Module Exam										
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.										
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)										
12	Module Prerequisites: none										
13	Presence: Strongly recommended										
14	Use of the module for other course programs: Bachelor Information Systems										
15	Responsible Lecturer: Dr. Ingolf Terveer, Prof. Dr. Heike Trautmann	Department: Münster School of Business and Economics									
16	<p>Misc.: It is strongly recommended to work on the course-topics continuously as they build upon each other during the whole course. An application to the tutorial is necessary, as the number of participants per (parallel) group is limited. For lecture and refreshment course, no application is needed. For successful work in the tutorial, a thorough recapitulation of lecture contents is strictly necessary. Therefore, the self-</p>										

	study-workload of the lecture and the tutorial cannot be strictly separated from each other.
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Foundations of Business Administration

Module Title english:		Foundations of Business Administration				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: BWL 1	State: Compulsory	Language of Instruction: German, partly English			
2	Turn: each winter term	Duration: 1 term	Semester: 1	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Introduction to Business Administration	2	30 h (2 CH)	30
	2	Course	Finance (German and English)	3	30 h (2 CH)	45
	3	Course	Investment (German and English)	3	30 h (2 CH)	45
	4	Exercise	Tutorial	1	30 h (2 CH)	30
4	Module Contents:					
	<p>Background and relations to other courses: The course serves as a natural starting point for every student of economic sciences by identifying and analysing the structure of modern enterprises. Therefore, transmission of basic knowledge and methods for analytic decision making are the course's main objectives. In the following semesters, students will mainly analyze parts of economic institutions isolatedly. Therefore, it is vital to provide a broader perspective on economic theory. Knowledge gained in the fields of investment and finance is meant to support everyday decision making.</p> <p>Main topics and learning objectives: The module provides elementary students with an overview of essential economic questions and methods and introduces the diverse functional units a firm is composed of. A profound analysis of investment and finance decisions – including the utilization of associated mathematical tools – serves as basis for further observations: students are expected to reason by using elementary economic concepts, autonomously develop solution approaches, classify tasks into a broader context and solve these especially in the area of investment and finance. The course is divided into two different parts that pursue the following learning objectives:</p>					
5	Learning outcomes:					
	<p>Academic: The students will be able to argue with basic business concepts, develop own simple solutions, classify tasks into a broader context and solve them. The knowledge gained from the more in-depth discussed area “Investment and corporate finance” can be used in practical decision-making.</p>					
6	Description of possible electives within the modules: none					
7	Examination: Final Module Exam					
8	Relevant Work:					
	Number and Type; Connection to Course		Duration	Part of final mark in %		

	Final written exam	120 min.	100 %
9	Study Work: Number and Type; Connection to Course		Duration
	none		
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.		
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)		
12	Module Prerequisites: none		
13	Presence: none		
14	Use of the module for other course programs: Bachelor Business Administration, Bachelor Economics, Bachelor Information Systems, Bachelor Mathematics, Bachelor Physics, Master Political Science		
15	Responsible Lecturer: Prof. Dr. Andreas Pfingsten	Department: Münster School of Business and Economics	
16	Misc.:		

Data Management

Module Title english:		Data Management				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: WI 2	State: Compulsory	Language of Instruction: German			
2	Turn: each summer term	Duration: 1 term	Semester: 2	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Data Management	3	30 h (2 CH)	60
2	Exercise	Tutorial Data Management	3	30 h (2 CH)	60	
4	Module Contents:					
	Main topics and learning objectives:					
	Data Management aims at the data view of information systems. It will discuss conceptual views (Entity Relationship Model, relational data model) and data implementation via SQL in relational data bases (Data Description Language, Data Manipulation Language, Data Control Language and Queries). Furthermore, transaction concepts (ACID) and locking mechanisms (two phase protocols) will be introduced. There will be lectures, excercises with MySQL data bases (or other DBMS) and case studies. Students will be asked to present their results to other students in the excercise hours.					
	Themes		Learning objectives			
Conceptual views		To formalize and transform business requirements regarding data into the IT world				
Implementation		To transfer concepts to relational data bases				
Transaction mechanisms and locking protocols		To understand mechanisms of DBMS				
5	Learning outcomes:					
	Academic: Students should become able to structure, model and implement data of information systems in data base management systems (DBMS) on methodical grounding.					
Soft skills: Sole and team work with required excercises. Learning soft skills in the area of project management, group discussions and result presentations.						
6	Description of possible electives within the modules: none					
7	Examination: Final Module Exam					
8	Relevant Work:					
	Number and Type; Connection to Course		Duration	Part of final mark in %		

	Final Written Exam	120 min.	100 %
9	Study Work: Number and Type; Connection to Course		Duration
	none		
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.		
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)		
12	Module Prerequisites: none		
13	Presence: The presence is strongly requested.		
14	Use of the module for other course programs: Bachelor Information Systems		
15	Responsible Lecturer: Prof. Dr. Dr. h.c. Jörg Becker	Department: School of Business and Economics	
16	Misc.:		

Data Structures and Algorithms

Module Title english:		Data Structures and Algorithms				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: Inf 2	State: Compulsory	Language of Instruction: German			
2	Turn: each summer term	Duration: 1 term	Semester: 2	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Data Structures and Algorithms	5	60 h (4 CH)	90
	2	Exercise	Exercises on Data Structures and Algorithms	4	30 h (2 CH)	90
4	Module Contents:					
	Background and relations to other courses:					
	The knowledge acquired in this lecture is a prerequisite for the modules “Software Engineering,” “Computer Structures and Operating Systems”, “Computer Science in depth”, “Project Seminar”, and the Bachelor thesis. The module presupposes basic programming and mathematical skills as conveyed in the modules “Programming” and “Mathematics for Economists”.					
	Main topics and learning objectives:					
Data structures specify the elementary layout variants of data in (main and secondary) memory of computers. Their key aspects concern creation, usage, and maintenance of the respective structure. Furthermore, they are central to the design of various algorithms, which form the foundation of various applications in computer science. In this lecture, a representative selection of data structures (such as lists, trees, heaps, graphs, stacks, queues, hash structures) as well as fundamental algorithms (such as searching and sorting, routing in graphs, tree algorithms, string matching) are presented. Essential aspects are, on the one hand, the development of analysis and evaluation techniques of algorithms and, on the other, the shaping of the ability to discriminate between “efficiency” and “inefficiency.” The latter paves the way towards so-called NP-complete problems and their approximate treatment. Besides the lecture, exercises are offered. Students are aware of fundamental algorithms to make best use of data structures. They are able to apply them competently, in particular with respect to efficiency. Furthermore, they are able to develop new algorithms and to determine their complexity.						
	Themes	Learning objectives				
	Representative selection of data structures	<ul style="list-style-type: none"> Explain layout of and differences between discussed data structures. Construct and apply suitable data structures for given scenarios. Evaluate different data structures for given scenarios (e.g., in view of memory requirements and running time of relevant algorithms). 				
	Fundamental algorithms	<ul style="list-style-type: none"> Apply and program algorithms. Develop new algorithms. 		<ul style="list-style-type: none"> Develop 		
	Analysis and evaluation of algorithms	<ul style="list-style-type: none"> Explain the notion of efficiency. and evaluate algorithms (e.g., in terms of their complexity). 			<ul style="list-style-type: none"> Analyze 	
5	Learning outcomes:					

	<p>Academic: Evaluation, selection, and application of suitable data structures and algorithms for given scenarios.</p> <p>Soft skills: Independent and team work to discuss and solve algorithmic problems. Presentation of devised solutions in small groups.</p>																		
6	<p>Description of possible electives within the modules: none</p>																		
7	<p>Examination: Examinations for every part of the module</p>																		
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none																			
10	<p>Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.</p>																		
11	<p>Weight of the module grade for the overall grade: 5% (9 of 180 CP)</p>																		
12	<p>Module Prerequisites: none</p>																		
13	<p>Presence: Regular class attendance, solving the course assignments, and passing the written examination.</p>																		
14	<p>Use of the module for other course programs: Bachelor Information Systems</p>																		
15	<p>Responsible Lecturer: Prof. Dr. Gottfried Vossen</p>	<p>Department: School of Business and Economics</p>																	
16	<p>Misc.:</p>																		

Operations Research

Module Title english:		Operations Research				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: QM 2	State: Compulsory	Language of Instruction: German			
2	Turn: each summer term	Duration: 1 term	Semester: 2	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Operations Research	3	30 h (2 CH)	60
	2	Exercise	Tutorial Operations Research	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	The course OR brings to the students mathematical optimization tools being very helpful in business administration. Hence OR can be applied in nearly every module that has at least a partially quantitative perspective. Prerequisite is a thorough knowledge of topics covered in the moduls "Mathematics for IS".					
	Main topics and learning objectives:					
	Themes	Learning objectives				
	Graphs and Trees	To understand graphs as an instrument to structure complex problems. To apply different optimization tasks like searching a shortest or longest path by common algorithms.				
Linear Programming	To analyze a linear problem and model a linear program. To solve a linear program by the 2-phase simplex algorithm. To understand duality and use it to solve and analyze linear problems.					
Integer Programming	To identify problems requiring integer solutions. To apply algorithms like cutting planes and branch & bound. To use special algorithms for transport and allocation problems.					
Decision Theory	To realize decision situations and identify optimal decisions. To consider risks and opportunities. To explain deviations from optimal decisions by means of descriptive decision theory.					
Game Theory	To understand that taking actions of opponents and partners into account extends the decision theory instruments. To take reasonable decisions in cooperative and non-cooperative situations, to distribute shares of costs and profits.					
5	Learning outcomes:					
	Academic: The students are able to transpose problems of business administration into mathematical models of Operations Research. They solve those problems and identify optimal decisions. Doing this, they have insight into extensions as well as limitations of the applied algorithms.					
	Soft skills: Reading and understanding formal texts (like mathematical formulas in economics), Working in small					

	groups (self study) in order to solve mathematical problems, Presentation Skills (when visiting the tutorial)	
6	Description of possible electives within the modules: none	
7	Examination: Examinations for every part of the module	
8	Relevant Work:	
	Number and Type; Connection to Course	Duration
		Part of final mark in %
	Homework	1 task per week (12 x approx. 2 pages)
	Written exam	90 min.
		25 %
		75 %
9	Study Work:	
	Number and Type; Connection to Course	Duration
	none	
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.	
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)	
12	Module Prerequisites: none	
13	Presence: Strongly recommended	
14	Use of the module for other course programs: Bachelor Information Systems	
15	Responsible Lecturer: Prof. Dr. Heike Trautmann	Department: School of Business and Economics
16	Misc.:	

Foundations of Accounting

Module Title english:		Foundations of Accounting				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: BWL 2	State: Compulsory	Language of Instruction: German, partly English			
2	Turn: each summer term	Duration: 1 term	Semester: 2	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Accounting and Annual Financial Statements	3	30 h (2 CH)	60
	2	Course	Foundations of Accounting (German an English)	4	45 h (3 CH)	75
	3	Exercise	Tutorial on Foundations of Corporate Accounting (German and English)	2	30 h (2 CH)	30
4	Module Contents:					
	<p>Background and relations to other courses: Accounting and Annual Financial Statement: As businesses constantly execute financial transactions including sales, purchase, payments etc. students will learn to book those transactions in the course of the account systems. The accumulation of all transactions is recorded in the annual financial statements. Those provide an overview of the financial condition of an enterprise. All information regarding the business is presented in a structured manner. To filter the required internal and external accounting information from the report, managers and investors must be capable of reading and interpreting financial statements. Students will therefore learn to read annual financial statements and understand them in detail. The first part of the course comprises the fundamentals of financial accounting as part of the organisational bookkeeping and annual reporting. The course will continue with the system of accounting transactions and annual statements. Within the scope of double-entry bookkeeping students will learn to execute accounting transactions on their own. In the fourth part students will organise transactions in standard forms of accounting on their own. The course closes with a comprehensive view as a basis for closing accounts. Foundations of Accounting: Managers and investors require internal and external accounting information for business and investment decisions. This course will enable students to learn about the roles, procedures and shortcomings of the mathematical models in use. In the first half of the semester students gain knowledge on costing systems and cost information for managers' decision-making and control. Thus, students learn on how to gain quantitative information, which is in other classes frequently taken for granted. During the second half of the semester, students gain knowledge about financial accounting principles within Germany which forms the basis for other courses focusing on special accounting issues. Furthermore, it enables students to assess differences between German GAAP and international accounting principles in advanced courses.</p> <p>Main topics and learning objectives: Accounting and Annual Financial Statement: The aim of this course is that students will gain the ability to understand accounting and financial accounting statements. By the end of the course students will be capable of independently booking transactions in the course of the accounting system. Beyond that they will be able to read and interpret annual financial statements. Foundations of Accounting: The aim of this course is that students will be able to understand the principles of both management and financial accounting systems. By the end of the course, it is expected that the students understand and are able to apply management accounting systems in different settings. In addition, students will gain an understanding in developing and analysing annual financial statements under German GAAP.</p>					

Themes	Learning objectives
Financial accounting as an element of organisational bookkeeping	To learn about the systematisation of organisational bookkeeping
Fundamentals of financial accounting	To study the organisation, legal bases and components of financial accounting
System of accounting and financial statements	To evaluate the financial and profit situation of a business as well as the system of doubleentry-bookkeeping and financial statements
Booking of complex business transactions	To book capital assets, personnel expenditures, inventory, fuel, raw and auxiliary materials as well as legal titles To learn about the structure of standard forms of accounts and standard forms of accounts in industry enterprises
Standard forms of accounts to organise the booking system	To execute a closing account
Purpose of accounting systems	To learn about the objectives of accounting systems and differences between essential terms.
Management accounting systems	To comprehend the scope of internal accounting systems depending on allocated costs and time
Cost-type accounting	To read and have a basic understanding of cost types focusing on mathematical methods and calculatory costs.
Cost-centre accounting	To assess the appropriateness in allocating costs to different costcentres applying the cost distribution sheet.
Cost-object accounting	To learn about a variety of methods to conduct cost-object accounting. To explain techniques which provide information concerning the company's success.
Selected cost accounting systems	To use additional cost accounting systems with a special focus on providing information for decision making.
Basic principles in financial accounting	To appreciate the intention and legal fundamentals of the financial statement considering addressees and legal principles emerging from the literature.
Balance sheet	To evaluate the elements of the balance sheet including both fixed and current assets and equity and debt.
Profit and loss statement	To study the types of profit and loss statements in use. To gain knowledge about the disposition of the net income.
Financial statement analysis	To perform financial statement analysis in order to assess the financial situation (profitability and financial risk) of a company applying the understanding gained before
5	<p>Learning outcomes: Academic: Accounting and Annual Financial Statement: During the 90 minutes written examination students have to accomplish various bookings in standard forms of accounts. Finally all of those are merged in the closing account.</p>

	<p>In the written examination, students are supposed to demonstrate their abilities</p> <ul style="list-style-type: none"> • Understand the fundamentals of financial accounting • Book specific transactions in standard forms of accounts • Read and interpret annual financial statements • Select and identify relevant information from the statement <p>Foundations of Corporate Accounting: The aim of this course is that students will be able to understand the principles of both management and financial accounting systems. By the end of the course, it is expected that the students understand and are able to apply management accounting systems in different settings. In addition, students will gain an understanding in developing and analysing annual financial statements under German GAAP.</p> <p>In the written examination, students are supposed to demonstrate their abilities</p> <ul style="list-style-type: none"> • to solve problems effectively within a limited period of time, • to transfer and integrate knowledge, methods and theory from lectures and workshops, • to present their solutions in a coherent and sophisticated manner, • to select and identify the most relevant aspects first. 											
6	Description of possible electives within the modules: none											
7	Examination: Examinations for every part of the module											
8	<p>Relevant Work:</p> <table border="1"> <thead> <tr> <th>Number and Type; Connection to Course</th> <th>Duration</th> <th>Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Written exam on Accounting and Annual Statements</td> <td>90 min.</td> <td>33.33 %</td> </tr> <tr> <td>Written exam on Foundations of Accounting</td> <td>120 min.</td> <td>67.67 %</td> </tr> </tbody> </table>			Number and Type; Connection to Course	Duration	Part of final mark in %	Written exam on Accounting and Annual Statements	90 min.	33.33 %	Written exam on Foundations of Accounting	120 min.	67.67 %
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None												
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.											
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)											
12	Module Prerequisites: none											
13	Presence: none											
14	Use of the module for other course programs: Bachelor Business Administration, Bachelor Economics, Bachelor Information Systems, Bachelor Mathematics, Bachelor Physics, Master Political Science											
15	Responsible Lecturer: Professor Dr. Wolfgang Berens	Department: School of Business and Economics										
16	Misc.:											

Process Management and Application Systems

Module Title english:		Process Management and Application Systems				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: WI 3	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 3	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Process Management and Application Systems	3	30 h (2 CH)	60
	2	Exercise	Tutorials on Process Management and Application Systems	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	<p>Application systems are ubiquitous in the business environment and appear in different forms. Although the general concept includes, for example, word processing software, the course focuses on e systems that are used exclusively in the business environment, i.e., enterprise systems. In this way the lecture builds on basic skills learned in the modules data management, software engineering and information management. Teaching methods are lectures, exercises, and lab exercises using different ERP systems and short presentations by students.</p>					
	Main topics and learning objectives:					
	<p>An application system is a system of software components to manage certain tasks in a business environment. The lecture application systems provides basic knowledge for the design and the use of application systems in enterprises and enterprise networks. Initially foundations of information modeling (e.g., function, organization, process modeling) will be intensified. Structure and function of selected application systems (especially ERP systems) are treated in depth and practiced in different systems. Guest lectures from the practice round out the lecture program. In tutorials, the course content will be repeated and applied in a problem-oriented way.</p>					
	Themes		Learning objectives			
	Basic features of application systems		Classifying application systems to describe and explain their potential for the enterprise.			
From concept to application		Deepen knowledge of modeling techniques (functional, organizational, process modeling) and apply it to solve practical problems.				
Fundamentals of ERP Systems		Understanding the structure and the functions of ERP systems, integrated business processes and management information systems.				
Management and operations with application systems		Analyzing the potential of application systems from an organizational point of view as well as considering selected obstacles in enterprises.				
Distributed application systems		Recognizing potential challenges and explain peculiarities of distributed application systems. Applying them to develop innovative network-based business models.				

5	<p>Learning outcomes: Academic: Students can describe basic properties and functions of different classes of business application systems (e.g., ERP, MRP, PLM, CRM, SRM, SCM) and their integration. Students deepen their understanding of different modeling methods and implement them to solve real-world problems. They can describe different (standard) business processes in companies and their integration. Furthermore they can identify and use strategies and tools to analyze and present the business potential of enterprise systems. Students will identify organizational challenges and obstacles related to enterprise systems, as well as analyze and resolve them. They recognize the potential benefits and characteristics of distributed application systems and use them to develop innovative network-based business models. Soft skills: Students learn and deepen the problem-solving capabilities in small groups as well as presentation skills during the presentation of their results. Through self-study the content of the course is deepened. Searching and analyzing academic literature is practiced by preparing for class.</p>								
6	<p>Description of possible electives within the modules: none</p>								
7	<p>Examination: Final Module Exam</p>								
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10	<p>Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.</p>								
11	<p>Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)</p>								
12	<p>Module Prerequisites: none</p>								
13	<p>Presence: none</p>								
14	<p>Use of the module for other course programs: Bachelor Information Systems</p>								
15	<p>Responsible Lecturer: Prof. Dr. Dr. h.c. Jörg Becker, PD Dr. Daniel Beverungen</p>	<p>Department: School of Business and Economics</p>							
16	<p>Misc.:</p>								

Software Engineering

Module Title english:		Software Engineering				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: Inf 3	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 3	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Software Engineering	2.5	45 h (3 CH)	30
	2	Exercise	Tutorial Software Engineering	3.5	15 h (1 CH)	90
4	Module Contents:					
	Background and relations to other courses:					
	Software Engineering conveys the skills to develop large software systems. It assumes that the students have passed the course on Programming and that they have hence obtained the required programming experience. Software Engineering skills will be required in e.g. different practical courses as well as for the bachelor thesis.					
	Main topics and learning objectives:					
	The aim of this course is that students shall be enabled to develop large software systems in teams. The corresponding management concepts and technical skills will be conveyed. The course covers the phases of the software engineering life cycle, namely planning, requirements definition and analysis, design, implementation, and testing. Particular emphasis will be placed on UML modelling, middleware, and design patterns. Moreover, process models (such as UP and XP) for software engineering will be presented.					
	Themes	Learning objectives				
	Planning	To learn the basic concepts of planning a software project such as e.g. cost prediction and scheduling.				
Requirements definition and analysis	To specify the requirements of a software system and develop a corresponding UML model.					
Design	To decompose the overall functionality of a software system into a system of interacting components and relationships between them. Know the most important design patterns and be able to apply them to solve design problems.					
Implementation	To implement a software design using a programming language.					
Testing Process models	To guarantee the quality of the developed software. To structure the software development process appropriately.					
5	Learning outcomes:					
	Academic: Students shall be enabled to develop large software systems systematically. Soft skills:					

	The students solve the exercises in teams of (e.g.) 5 students. This strengthens their ability to work together and develop software in teams.		
6	Description of possible electives within the modules: none		
7	Examination: Examinations for every part of the module		
8	Relevant Work:		
	Number and Type; Connection to Course	Duration	Part of final mark in %
	Written exam	120 min.	80 %
	Exercises	6 x approx. 5 pages	20 %
9	Study Work:		
	Number and Type; Connection to Course	Duration	
	none		
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.		
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)		
12	Module Prerequisites: none		
13	Presence: Strongly recommended		
14	Use of the module for other course programs: Bachelor Information Systems		
15	Responsible Lecturer: Prof. Dr. Herbert Kuchen		Department: School of Business and Economics
16	Misc.:		

Data and Probability

Module Title english:		Data and Probability				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: QM 3	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 3	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Data and Probability	3	30 h (2 CH)	60
	2	Exercise	Tutorial for Data and Probability	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	In IT supported business, huge amount of data emerges which is to be exploited in order to improve processes etc. The module first discusses “data” and, subsequently, deals with some purely data driven techniques. Generalising statements inevitably requires a probability model. To this end, the module introduces the mathematical basics of probability theory in IS-studies. Probability models are fundamental in economical practice – in science as well as in business. Especially, “Data Analytics and Simulation”, but also specialization courses like “Stochastics in Finance”, make intensive use of probability calculus. As a prerequisite, knowledge of the contents of “Mathematics for IS” should be thorough.					
	Main topics and learning objectives:					
	Themes	Learning objectives				
	Descriptive Statistics: Data, Scales	To get acquainted with data sources, the statistical meaning of numbers and data representations.				
Probabilities, random variables	To learn about the assessment of uncertainty and to master the language of probability theory. To investigate probabilities by means of distributional measures based on distribution function and expectation					
Conditioning, Independence	To understand how probabilities are to be reassessed if (real or hypothetical) information is available To deal with events and random quantities that are mutually uninformative.					
Limit theorems	To grasp the meaning of the (strong) law of large numbers resp. the Glivenko-Cantelli theorem					
Interdependencies Statistical Software tools	To get insight to probability models for multivariate data, i.e. data with several attributes. To understand how the dependence between attributes can be quantified theoretically and empirically. To be familiar with (at least) one statistical package (such as “R”). To use this package in solving statistical problems that arise in applications.					
5	Learning outcomes:					
	Academic:					
	The student should demonstrate the capability to handle moderate probability models describing					

	<p>economical problems. Furthermore, the the student should understand the interrelation between theoretical models and empirical data – e.g., by means of limit theorems.</p> <p>Soft skills: Reading and understanding formal texts using probability-language. Working in small groups (self study) in order to solve mathematical problems.</p>											
6	Description of possible electives within the modules: none											
7	Examination: Final Module Exam											
8	<table border="1"> <thead> <tr> <th colspan="3">Relevant Work:</th> </tr> <tr> <th>Number and Type; Connection to Course</th> <th>Duration</th> <th>Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Final written exam</td> <td>90 min.</td> <td>100 %</td> </tr> </tbody> </table>			Relevant Work:			Number and Type; Connection to Course	Duration	Part of final mark in %	Final written exam	90 min.	100 %
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.											
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)											
12	Module Prerequisites: none											
13	Presence: Strongly recommended											
14	Use of the module for other course programs: Bachelor Information Systems											
15	Responsible Lecturer: Prof. Dr. Heike Trautmann	Department: School of Business and Economics										
16	Misc.:											

Operations Management

Module Title english:		Operations Management				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: BWL 4	State: Compulsory	Language of Instruction: German and English			
2	Turn: each winter term	Duration: 1 term	Semester: 3	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Operations Management	3	30 h (2 CH)	60
	2	Exercise	Tutorial on Operations Management	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	<p>This module gives an introduction into the field of operations management. Selected business cases motivate the themes by demonstrating the potential that can be realized with good operations management. Furthermore, the basic methods of operations management and their practical application are taught. The exercise supports the practice and deepening of the lecture content by applying it to concrete problems. Operations management deals with the management of processes in the production and service sector, and is located in the functional unit operations. For managing the assigned processes it is necessary to continually coordinate with other functional areas. For instance, it is important for inventory management to know the upcoming sales promotions planned by marketing. Regarding other courses, students should have successfully passed the first and the second semester, especially the lectures “Mathematics for Economists” and “Statistics I”. Furthermore, this module is a foundation for the module “Logistics Management”.</p>					
	Main topics and learning objectives:					
	The core objective of this module is to teach the most important qualitative and quantitative methods under the below themes.					
	Themes	Learning objectives				
	Forecasting and Demand Planning	To Describe and compare various types of quantitative and qualitative models. To Determine which forecasting model produces the best forecast for given data. Controlling charts to monitor a forecast.				
	Location Planning	To Learn different approaches for location decisions.				
Process Design	To design, model and improve processes by using different approaches.					
Inventory Management	To learn different functions of inventories, objectives of inventory control, and techniques for determining how much to order and when to order.					
Production Planning	To learn the different approaches for production planning like manufacturing resources planning, aggregate planning, master production schedule, materials requirements planning and concepts and criterions for just in time production.					
Scheduling	To comprehend the objectives and methods of scheduling operations e.g. to					

	Operations	allocate workloads to specific work centers and to determine the sequence in which operations have to be performed.							
	Supply Chain Management	To get an overview of drivers, definition, objectives and building blocks of supply chain management. To learn specific methods of supply chain management for product and process design.							
5	<p>Learning outcomes:</p> <p>Academic: The student should demonstrate the ability to reproduce his knowledge about the concepts and methods of Operations Management, to apply that knowledge to a new context, and to integrate and apply the taught themes.</p> <p>Soft skills: By preparing and reviewing the lecture contents and tasks given in the exercise in workgroups during their self-study, students improve their team work skill. This is supported by a Learnweb discussion forum that is guided by the chair. Furthermore, this course increases their ability to understand formal texts (like mathematical formulas) and to solve quantitative tasks. Also, students learn how to use software tools that support mathematical calculations.</p>								
6	Description of possible electives within the modules: none								
7	Examination: Final Module Exam								
8	<p>Relevant Work:</p> <table border="1"> <thead> <tr> <th>Number and Type; Connection to Course</th> <th>Duration</th> <th>Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Final written exam</td> <td>90 min.</td> <td>100 %</td> </tr> </tbody> </table>			Number and Type; Connection to Course	Duration	Part of final mark in %	Final written exam	90 min.	100 %
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none									
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.								
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)								
12	Module Prerequisites: Students should have successfully passed the first and the second semester, especially the lectures “Mathematics for Economists” and “Statistics I”.								
13	Presence: none								
14	Use of the module for other course programs: Bachelor Business Administration, Bachelor Economics, Bachelor Information Systems								
15	Responsible Lecturer: Prof. Dr.-Ing. Bernd Hellingrath	Department: School of Business and Economics							
16	Misc.:								

Introduction to Economics for IS

Module Title english:		Introduction to Economics for IS				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: So 1	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 3	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Economics for IS: lecture	3	30 h (2 CH)	60
	2	Exercise	Economics for IS: tutorial	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	<p>With increasing significance, success in business on more complex, especially digital, markets relies on a deeper understanding of the basic conditions of functioning markets and their normative foundations in a modern democratic society. Therefore, this course introduces economics as a key strand of the social sciences, leading to a fundamental understanding not only of the economy but of social phenomena in general. The students develop a critical understanding of the basic concepts underpinning the science of economics in its microeconomic and macroeconomic branches. They also acquire the competency to apply the fundamental concepts and ethical challenges of a market-based economy in democracy to issues of strategic management. The microeconomic unit deals with individual choice under scarcity and with the design of incentives through institutions, including markets for digital commodities where peculiarities on the supply or demand side may play a major role. The macroeconomic unit addresses basic macroeconomic policy issues.</p>					
	Main topics and learning objectives:					
	Themes	Learning objectives				
	Fundamentals of Economics	Ability to apply fundamental principles of economic reasoning (e.g., scarcity, opportunity cost, thinking at the margin) to decisions in business				
	Normative foundations of markets	Understanding the normative prerequisites of making business in democracy and knowing how to apply them to issues of strategic management				
The ethical dimension	Ability to apply basic ethical considerations to business decisions					
Scarcity and individual choice, markets and competition	Understanding of the conditions of functioning markets, ability to apply conceptual knowledge to decisions in business, especially in the digital economy					
The larger economy	Understanding and applying basic macroeconomic concepts					
5	Learning outcomes:					
	<p>Academic: By the end of the course, the students are able to apply fundamental economic concepts to issues they will</p>					

	<p>encounter in business.</p> <p>Soft skills: By the end of the course, the students have acquired a deeper understanding of the ethical foundations of markets, and they are enabled to apply the concepts of individual and corporate responsibilities in practice.</p>											
6	<p>Description of possible electives within the modules: none</p>											
7	<p>Examination: Final Module Exam</p>											
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10	<p>Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.</p>											
11	<p>Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)</p>											
12	<p>Module Prerequisites: none</p>											
13	<p>Presence: strongly recommended</p>											
14	<p>Use of the module for other course programs: Bachelor Information Systems</p>											
15	<p>Responsible Lecturer: Dr. Jörg Peter Lingens, Professor Dr. Ulrich Suntum</p>	<p>Department: School of Business and Economics</p>										
16	<p>Misc.: Regular work on the course topics is strongly recommended as they are closely related towards one another.</p>											

Project Management

Module Title english:		Project Management				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: WI 4	State: Compulsory	Language of Instruction: English			
2	Turn: each summer term	Duration: 1 term	Semester: 4	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Project Management	3	30 h (2 CH)	60
	2	Exercise	Tutorial on Project Management	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	Project Management skills are an essential part of conducting IT projects. The methods and software tools learned in this course are an essentially basis for further courses in the Information Systems curriculum, especially for managing software project seminars. General knowledge on managing projects might prove helpful to students for organizing their Bachelor or Master theses also.					
	Main topics and learning objectives:					
	Project Management includes the planning, execution, and monitoring and controlling of projects. The lecture Project Management provides basic knowledge of (IT) Project Management and addresses the entire project life cycle / project management process. Besides introducing and integrating the distinct phases of the project lifecycle, current methods and tools for project management are introduced. Tutorials and Assignments allow for repeating the contents of the lecture and applying project management methods and tools in a problem-oriented way. Furthermore, guest lectures from industry representatives add to the practical applicability of the lecture program.					
	Themes		Learning objectives			
	Introduction to (IT) Project Management		Basic information about IT project management, learn about project management theories and project management fundamentals			
	Project Lifecycle / Project Management Process		Deepen knowledge of the integrated project management process and the project life cycle			
	Project Integration Management		Understand the challenges of project integration into the general organizational structures			
	Project Scope Management		Learn about framing and focusing on achieving the outcomes of a project			
Project Time Management		Recognize challenges, needs and prospects related to time management in projects				
Project Cost Management		Understand how to calculate costs and budgets in projects appropriately				
Project Quality Management		Analyze project results in terms of quality requirements				

	Project HR Management	Learn how to manage project staff in the different lifecycle stages of a project												
	Project Communications Management	Understand the importance, needs and methods of communicating project results to stakeholders												
	Project Risk Management	Learn how to identify, estimate, and deal with risks in the project life cycle												
	Project Procurement Management	Understand how to conduct purchases and how to configure subcontracts with external vendors in projects												
	Specialized Topics of IT Project Management	Deepen knowledge in dealing with particular topics in IT projects (e.g., Project Management in IT Outsourcing, IT Service Management, IT Strategy Projects or in special domains such as eGovernment Projects).												
	Software Tutorials	Apply and improve project management methods by using selected software tools (such as SAP Project System, Microsoft Project)												
	Assignments	Apply project management methods and software tools to solve group assignments that have a reference to real-world project management scenarios												
5	<p>Learning outcomes:</p> <p>Academic: Students are able to describe the basic theoretical foundations and theories of project management. Students understand and manage the project management life cycle and its project management processes. Students can describe and apply further issues and needs required in a holistic project management approach. Students deepen their understanding of different project management methods and software tools and apply appropriate method(s) to solve real-world project management situations.</p> <p>Soft skills: Students learn and deepen their problem-solving capabilities in small groups as well as their presentation skills during the presentation of their results to a general audience. Through self-study, the contents of the course are further explored by the students in order to improve their skills for literature review. Searching and analyzing academic literature is done in order to prepare for class and to put the contents of the class in a general context.</p>													
6	<p>Description of possible electives within the modules: none</p>													
7	<p>Examination: Examinations for every part of the module</p>													
8	<p>Relevant Work:</p> <table border="1"> <thead> <tr> <th>Number and Type; Connection to Course</th> <th>Duration</th> <th>Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Final written exam</td> <td>120 min.</td> <td>80 %</td> </tr> <tr> <td>Short group presentation + discussion (group of approx. 5 students)</td> <td>20 min.</td> <td>10 %</td> </tr> <tr> <td>Group work essay (group of approx. 5 students)</td> <td>4000 words</td> <td>10 %</td> </tr> </tbody> </table>		Number and Type; Connection to Course	Duration	Part of final mark in %	Final written exam	120 min.	80 %	Short group presentation + discussion (group of approx. 5 students)	20 min.	10 %	Group work essay (group of approx. 5 students)	4000 words	10 %
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none														
10	<p>Prerequisites for Credit Points:</p>													

	The credit points will be granted after all relevant work and study work have been successfully completed.	
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)	
12	Module Prerequisites: There are no prerequisites, however, having completed the module Application Systems would be beneficial in order to understand the inner workings of project management software (such as SAP PS).	
13	Presence: The attendance at lectures and active participation in the tutorials and group assignments is highly recommended.	
14	Use of the module for other course programs: Bachelor Information Systems	
15	Responsible Lecturer: Dr. Michael Räckers	Department: School of Business and Economics
16	Misc.:	

Communication and Collaboration Systems

Module Title english:		Communication and Collaboration Systems				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: WI 5	State: Compulsory	Language of Instruction: English			
2	Turn: each summer term	Duration: 1 term	Semester: 4	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Communication and Collaboration Systems	3.5	30 h (2 CH)	75
	2	Exercise	Application of Communication and Collaboration Systems	2.5	30 h (2 CH)	45
4	Module Contents:					
	<p>Background and relations to other courses: Communication and Collaboration Systems (KUK) are a premise for the cooperation in Teams and organizations across space and time borders. The modules goal is to show and explain to students the broad spectrum of communication and collaboration elements. The module contains lecture, case study elaboration and application of recent Communication and Collaboration Technologies such as social media.</p> <p>Main topics and learning objectives: Participants should get an overview about recent technologies of communication and collaboration systems and adapt theoretical, social and organizational knowledge about such systems. Furthermore, the requirements for the management processes of distributed cooperation systems need to be understood. Therefore, the module introduces technical aspects of communication infrastructures, establishes topics from a communication theoretical point of view and addresses the challenges of virtual teamwork. Distributed systems are discussed from a management perspective (CSCW, collaborative systems for distributed teams). Additionally, basic knowledge about technical structures of distributes systems are addressed (e.g. ISO/OSI model).</p>					
	Themes	Learning objectives				
	Social Media, Enterprise 2.0, communication and collaboration systems	Classification of communication technologies, understanding the relevance of new communication technologies for enterprises				
5	Learning outcomes:					
	<p>Academic: Students become secure in the classification and choice of Communication and Collaboration Systems. In particular students are familiar with potentials and risks for organizations that are resulting from current developments like Unified Communications or Social Networks.</p> <p>Soft skills: Case studies are used to support experiential learning. They have to deal with real-world problems and have to organize their teamwork and project management. Therefore, social skills as well as presentation techniques are trained.</p>					

6	Description of possible electives within the modules: none		
7	Examination: Examinations for every part of the module		
8	Relevant Work:		
	Number and Type; Connection to Course	Duration	Part of final mark in %
	Written exam	60 min.	75 %
	3 Exercises	Case Studies 3 x approx. 10 pages each	25 %
9	Study Work:		
	Number and Type; Connection to Course	Duration	
	none		
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.		
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)		
12	Module Prerequisites: none		
13	Presence: The presence is strongly requested.		
14	Use of the module for other course programs: Bachelor Information Systems		
15	Responsible Lecturer: Prof. Dr. Stefan Stieglitz		Department: School of Business and Economics
16	Misc.: The lecturer announces during the first lecture the registration process for the participation in the exercises		

Computer Structures and Operating Systems

Module Title english:		Computer Structures and Operating Systems				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: Inf 4	State: Compulsory	Language of Instruction: English			
2	Turn: each summer term	Duration: 1 term	Semester: 4	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Computer Structures and Operating Systems	6	60 h (4 CH)	120
	2	Exercise	Tutorial on Computer Structures and Operating Systems	3	30 h (2 CH)	60
4	Module Contents:					
	<p>Background and relations to other courses: This course presents the foundations of computer architecture and organization as well as the fundamentals of operating systems. It covers the basic composition and functionality of a computer, starts from individual components and derives larger units from them. An important aspect is the understanding of mathematical foundations underlying computer circuits, which is why the course takes students from Boolean functions to adders, multiplexers, PLAs, and storage. The result is the basic von Neumann model of a sequential machine, which is treated from a modern perspective. Based on this understanding of computer hardware, the course then deals with the fundamentals of operating systems. Operating systems provide elementary functionality which interacts with specific hardware and provides abstract services for applications that do not need to know details about specific hardware. Typical functionality and services include resource and memory management, process management and processor scheduling, I/O, as well as protection and security mechanisms, all of which are addressed in class. Thus, this course forms the basis for understanding hardware and software interactions in larger systems.</p> <p>Main topics and learning objectives: The primary purpose of the course is to develop a solid background of computer structures and operating systems. Students learn to translate problems into Boolean functions, to design and optimize functional units for sample problems, to discuss the fundamental von Neumann concept, in particular with respect to performance. They are able to discuss architectures, concepts, and components of operating systems and to apply typical management tasks and data structures in sample scenarios.</p>					
Themes			Learning objectives			
Von Neumann computer concept, programming models for CPUs, pipelining			To describe and make good use of the most fundamental computer model that is still valid today, seen from a modern perspective of achieving performance			
Assembler programming			To explain and write simple procedures in this field of programming as used in high-performance as well as embedded applications			
Boolean functions, multiplexers, adders, PLAs, PALs			To apply the basics of switching theory and discuss its connections to modern computer building blocks			
Operating system architecture,			To discuss major architectures and components of modern OSs; to			

	processes, threads	explain and contrast processes and threads and their roles for OSs and applications										
	Scheduling, I/O, virtual memory, file systems	To explain OS data structures, algorithms, and management techniques										
	Concurrency, mutual exclusion	To analyze programming challenges arising from concurrency and to apply appropriate techniques addressing these challenges										
	Security	To discuss the notion of IT security and to apply security mechanisms provided by the operating system in support of secure IT systems										
5	Learning outcomes: Academic: Solid understanding of computer organization and the interaction of hardware and operating software. Soft skills: Independent and interactive work with a simulation tool, individually as well as in groups.											
6	Description of possible electives within the modules: none											
7	Examination: Examinations for every part of the module											
8	Relevant Work: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Number and Type; Connection to Course</th> <th style="width: 25%;">Duration</th> <th style="width: 25%;">Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Written exam</td> <td>120 min.</td> <td>70 %</td> </tr> <tr> <td>10 Course Assignments</td> <td>10 x approx. 5 pages each</td> <td>30 %</td> </tr> </tbody> </table>			Number and Type; Connection to Course	Duration	Part of final mark in %	Written exam	120 min.	70 %	10 Course Assignments	10 x approx. 5 pages each	30 %
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.											
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)											
12	Module Prerequisites: none											
13	Presence: Presence is strictly advised.											
14	Use of the module for other course programs: Bachelor Information Systems											
15	Responsible Lecturer: Prof. Dr. Gottfried Vossen	Department: School of Business and Economics										
16	Misc.:											

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Data Analysis and Simulation

Module Title english:		Data Analysis and Simulation				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: QM 4	State: Compulsory	Language of Instruction: German			
2	Turn: each summer term	Duration: 1 term	Semester: 4	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Data and Probability	3	30 h (2 CH)	60
	2	Exercise	Tutorial for Data and Probability	3	30 h (2 CH)	60
	3	Course / Exercise	Simulation	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	This module is based on the introductory module “Data and Probability”. It covers the fundamentals of statistical data analysis as well as the use of simulation methods in order to investigate business processes. To this end, software tools for statistical analysis and simulation are investigated during the courses. The techniques covered are basic in forthcoming modules focusing on empirical data. In particular, specialization courses in Quantitative Methods often employ tools and methods for statistical testing or simulation.					
	Main topics and learning objectives:					
	Themes	Learning objectives				
	Model selection and pertaining techniques	To grasp the role of conditional distribution in the context of data analysis. Subsequently, to get acquainted with the standard techniques of model selection: parameter estimation (method of moments, maximum likelihood) and testing statistical hypotheses.				
Sampling distributions	To learn how the distribution of condensed data (test statistics) can be computed from the parent distribution – at least in some simple cases. To find approximate solutions provided by the central limit theorem.					
Input-Output Analysis, explanation and forecasting	To get familiar with the standard problems of inductive data (metric and categorical regression resp. classification) and the classical procedures. To regard I/O-problems in the general context of conditioning.					
Statistical Software tools	To gain more experience with (at least) one statistical package (such as “R”). To use this package in solving statistical problems that arise in applications. To know about problems that can be solved by simulation. To find out how methods of mathematics and simulation can complement each other in (interconnected) service systems. To generate germanely distributed random numbers for various applications by computer.					
Simulation tools	To use software tools (such as “Arena”) to model interconnected service systems					

	and execute simulations.								
5	<p>Learning outcomes: Academic: The Students know/can apply fundamental statistical methods in IS. He/she is capable of modeling queuing systems in mathematical terms. Soft skills: Reading and understanding formal texts using probability-language. Working in small groups (self study) in order to solve mathematical problems, Presentation Skills (when visiting the tutorial). Knowledge of common Software-Tools in Statistics and Simulation</p>								
6	Description of possible electives within the modules: none								
7	Examination: Final Module Exam								
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.								
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)								
12	Module Prerequisites: none								
13	Presence: Strongly recommended								
14	Use of the module for other course programs: Bachelor Information Systems								
15	Responsible Lecturer: Prof. Dr. Heike Trautmann	Department: School of Business and Economics							
16	<p>Misc.: It is strongly recommended to work on the course-topics continuously as they build upon each other during the courses. An application to the tutorial is necessary, as the number of participants per (parallel) group is limited. For lecture and refreshment course, no application is needed. For successful work in the tutorial, a thorough recapitulation of lecture contents is mandatory.</p>								

Electronic Business

Module Title english:		Electronic Business				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: WI 6	State: Compulsory	Language of Instruction: English			
2	Turn: each winter term	Duration: 1 term	Semester: 5	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Electronic Business	2.5	30 h (2 CH)	45
2	Exercise	Course Assignments, Presentations & Discussion	3.5	30 h (2 CH)	75	
4	Module Contents:					
	Main topics and learning objectives:					
	Electronic Business is thriving and is making significant inroads in business and everyday life. In fact, doing business electronically has become an integral part of everyday life for public and private organisations, both large and small, across the globe. Based on the information society discourse and related political visions like “eEurope”, the course will provide an overview of the core building blocks of business models. As it is widely recognized that eBusiness is best understood in a sectorial context, which reflect the contingencies and specifics of a respective industry, the course will use the travel and tourism industry as lead example and elaborate on the usage and development of eBusiness across different segments of that industry. Travel and tourism is an example of a global services industry characterized by a high level of information intensity and ICT innovation. Given the increasing exposure of businesses to security threats, the course will provide a brief introduction into theoretical and practical security, security strategy and privacy. Given the ongoing dynamics in business and the related need to manage and prioritize projects, the course encompasses a module in project management. The module explains the need for project management and introduces project management methods as well as different perspectives on IT project management.					
	Themes		Learning objectives			
	Internet Economics and the Information Society		To learn about ICT-related political visions and action programmes and to assess their role for companies and citizens.			
	eBusiness basics: technology driven business innovation		To understand the role of eBusiness models and to critically assess the development of electronic business and the role of technology (ICT).			
	The tourism industry		To identify stakeholders and their roles, to understand the specifics of tourism products and to assess the transformation of tourism distribution systems. To understand how service properties and industry structures shape managerial decisions.			
The customer perspective		To comprehend the customer buying cycle and the notion of CRM. To assess the role of Prosuming and service configuration.				
Content management		To appreciate the role of content in tourism and to distinguish different				

	models of content production and provision as well as rights management.										
5	<p>Learning outcomes:</p> <p>Academic:</p> <p>In preparing a briefing, debate or demonstration, the student should demonstrate the ability</p> <ul style="list-style-type: none"> to select, engage with, assess and apply pieces of literature, to build a concise, yet coherent argument and to identify open issues. <p>In the written examination, the student should demonstrate the ability</p> <ul style="list-style-type: none"> to develop a coherent argument within a limited period of time, to integrate and apply several concepts, to weigh pros and cons or identify threats, and to apply the concepts to a business case. <p>Soft skills:</p> <p>The student should demonstrate the ability</p> <ul style="list-style-type: none"> to productively work in groups and to coordinate with peers. 										
6	Description of possible electives within the modules: none										
7	Examination: Final Module Exam										
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.										
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)										
12	Module Prerequisites: Working Knowledge of English										
13	Presence: Mandatory for presentation of assignments. Generally strongly recommended										
14	Use of the module for other course programs: Bachelor Information Systems										
15	Responsible Lecturer: Prof. Dr. Stefan Klein	Department: School of Business and Economics									

Misc.:

This course is intended to be a seminar rather than a lecture course and, as such, the primary responsibility for learning will rest with the students. The philosophy behind the course is that the combination of reading, thinking, writing, presenting, discussing, and listening is highly effective for learning.

Participation in well-prepared and thoughtful discussions is a powerful way of gaining an appreciation for the critical issues relating to the development and impact of electronic business and more generally an Internet Economy and Society. Consequently, the main class activity will be discussion. Students are expected to come to class having read the assigned reading materials, be prepared to discuss the major issues presented in the readings and to debate their (management) implications. The quality of students learning experience will depend on the extent of their motivation, initiative, preparation for class, and participation during class. The instructor's role will be to support the learning experience by providing a course structure, course materials, mini-lectures, facilitating the discussions, and providing feedback on the student's work.

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Foundations of Marketing

Module Title english:		Foundations of Marketing				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: BWL 8	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 5	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Foundations of Marketing	3	30 h (2 CH)	60
	2	Exercise	Tutorial on Foundations of Marketing	3	30 h (2 CH)	60
4	<p>Module Contents:</p> <p>Background and relations to other courses: Marketing management is one of the most challenging and complex areas companies are faced with. The role of marketing is strongly connected with the type of market. Today's markets can be described as buyer markets, i.e. the supply is higher than the demand for products. Companies therefore have to differentiate and provide offerings that are most desired in the market place. Marketing strategies systematically integrate the customers' needs, the company specific resource based view as well as factors that influence competition. Considering those three factors a wide array of choices is offered. Despite its reputation as a "soft" field, marketing combines theories from many disciplines such as economics, mathematics, psychology, sociology, creative arts, and many more. Marketing lectures demand qualitative as well as quantitative skills.</p> <p>Main topics and learning objectives: The course is split into two parts. The first part is labeled "Strategic Marketing". It includes an introduction into the discipline of marketing, with an emphasis on an institutional decision-making perspective, and then focuses strategic components of the marketing process. The second part is on marketing mix instruments. After completing this part students will be able to describe and understand basic elements of the marketing and to evaluate ethical issues in marketing. Two separate teaching modes are implemented in this course. The core part is constituted by a traditional lecture, in which all relevant facts will be taught. The course is combined with a special type of tutorial that consists of two parts – an internet-based tutorial as well as a traditional tutorial. In the internet-based tutorial, students are assigned case studies and further tasks in close connection to the progress of the lecture, transferring recently taught knowledge to practical exercises. Students' individual learning is assisted by using web-based learning techniques such as forums. The traditional part of the tutorial is specifically designed to provide individual assistance and guidance and makes use of face to face teaching. Students are therefore expected to continually acquire, process, and apply new knowledge. This course will give students a comprehensive overview on both marketing theory and practice.</p>					
	Themes	Learning objectives				
Marketing and Decision-Making	To comprehend the complex relationship of marketing and strategic, institutional decision making.					
Marketing Strategies	To learn to understand marketing as a complex process of strategic decision making steps in a competitive economic system.					

	Strategic Decision Problems	To understand, differentiate, and analyze distinctive components of decision making in marketing practice.							
	Brand Management	To understand basic branding strategies. To describe basic options of branding architecture options (focus is on brand transfer).							
	Product-Development	To describe basic steps when developing new products based on customers' needs,							
	Pricing	To know factors and methods that influence pricing. To compute optimal prices for specific market conditions.							
	Distribution	To describe basic steps when implementing new distribution strategies.							
	Communication	To describe and compare several media types. To describe basic elements when creating communication strategies. To understand factors that influence the effectiveness of advertising campaigns.							
5	<p>Learning outcomes:</p> <p>Academic: The written final examination (90 minutes) will cover all topics discussed in class. In the written final examination, the student should demonstrate the ability • to develop a coherent argument within a limited period of time, •to integrate and apply several concepts.</p> <p>Soft skills: Extending Knowledge: Students have an overview of relevant problem areas in marketing Instrumental competence: the knowledge imparted to the students can be applied in the development of marketing strategies and they can develop situation-specific solutions Communication skills: Students learn to exchange information on problems and to develop solutions in teams</p>								
6	Description of possible electives within the modules: none								
7	Examination: Final Module Exam								
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10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.								
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)								
12	Module Prerequisites: none								
13	Presence: none								

14	Use of the module for other course programs: Bachelor Business Administration, Bachelor Economics, Bachelor Information Systems, Bachelor Mathematics, Master Physics	
15	Responsible Lecturer: Professor Dr. Thorsten Wiesel	Department: School of Business and Economics
16	Misc.:	

IT-Law

Module Title english:		IT-Law				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: So 2	State: Compulsory	Language of Instruction: German			
2	Turn: each winter term	Duration: 1 term	Semester: 5	CP: 6	Workload (h): 180	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course / Exercise	IT-Law	6	60 h (4 CH)	120
4	Module Contents:					
	Background and relations to other courses:					
	The knowledge of IT-specific legal knowledge is indispensable within all quantitative subject fields of business informatics. Previous knowledge from other modules is not required.					
	Main topics and learning objectives:					
	Themes	Learning objectives				
	Distance selling law	knowledge of legal peculiarities of contracts concluded on the Internet, duty to inform b2b, b2C				
IT contract law	knowledge and contents of contracts concerning IT transactions, classification and application of conventional contract types of the German Civil Code, e.g. the contract of sale, service contract and the lease contract by reference to the peculiarities of the IT law, main features of defects liability in software law, content control and the design of typical IT contracts					
Data protection law	origins and constitutional background of data privacy law, overview and illustration of rationales of data privacy law on the basis of the Federal Data Protection Act (BDSG) with emphasis on data handling in privacy, rights of the persons concerned, data privacy law within the framework of the German Teleservices Act (GTA), features and peculiarities of the German Teleservices Act with regard to general data protection law and the rights of the persons involved, duties of an internal commissioner for data protection and freedom of information					
Copyright law	acquaintance with the structure of copyright law, the author and the authorised user, copyright in employment, peculiarities of computer programmes					
Trademark law, especially domain law	differentiation between name, business denomination and trademark, characteristics of domain law, trademarks in the social web					
5	Learning outcomes:					
	Academic:					
	At the end of the module, the students have gained a sound overview over the German and the European law system and the capability to recognise IT-specific legal problems, and are therefore in a position to address these towards the respective decision-maker in their future professional field or in project					

	<p>consulting. The students should be able to solve simple legal cases on their own or to take appropriate measures in order to counteract and to eliminate the previously identified legal problems.</p> <p>Soft skills: Perseverance in the familiarisation with an entirely new subject field and the ability to apply abstract norms to real-life scenarios; teamwork (within the scope of joint case-solving); knowledge of legal norms and the structure of the German and European law systems.</p>											
6	Description of possible electives within the modules: none											
7	Examination: Final Module Exam											
8	<table border="1"> <thead> <tr> <th colspan="3">Relevant Work:</th> </tr> <tr> <th>Number and Type; Connection to Course</th> <th>Duration</th> <th>Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Final written exam</td> <td>120 min.</td> <td>100 %</td> </tr> </tbody> </table>			Relevant Work:			Number and Type; Connection to Course	Duration	Part of final mark in %	Final written exam	120 min.	100 %
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Study Work:												
Number and Type; Connection to Course	Duration											
none												
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.											
11	Weight of the module grade for the overall grade: 3.33% (6 of 180 CP)											
12	Module Prerequisites: none											
13	Presence: Presence is urgently advised.											
14	Use of the module for other course programs: Bachelor Information Systems											
15	Responsible Lecturer: Honorarprof. Dr. Ulrich Luckhaus	Department: School of Business and Economics										
16	Misc.:											

Project Seminar

Module Title english:		Project Seminar				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: PS	State: Compulsory	Language of Instruction: German			
2	Turn: each term	Duration: 1 term	Semester: 5, 6	CP: 12	Workload (h): 360	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Seminar	Project Work	6	60 h (4 CH)	120
	2	Seminar	Project Management	3	30 h (2 CH)	60
	3	Seminar	Presentation	3	30 h (2 CH)	60
4	Module Contents:					
	Background and relations to other courses:					
	The material and methods learned in the previous courses shall 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 will be helpful for the bachelor thesis.					
	Main topics and learning objectives:					
	The material and methods learned in previous courses are applied in a practice-oriented project. 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-the-art 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: Solution of a complex practice-oriented problem. Soft skills: (among others) ability to work in a team, ability to communicate and cooperate, leadership skills, media competence, time management					
6	Description of possible electives within the modules:					

	none	
7	Examination: Final Module Exam	
8	Relevant Work:	
	Number and Type; Connection to Course	Duration
	Papers and corresponding presentations; project work	30 pages + 90 min. per presentation
		Part of final mark in %
		100 %
9	Study Work:	
	Number and Type; Connection to Course	Duration
	none	
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.	
11	Weight of the module grade for the overall grade: 6.67% (12 of 180 CP)	
12	Module Prerequisites: none	
13	Presence: Presence is mandatory	
14	Use of the module for other course programs: Bachelor Information Systems	
15	Responsible Lecturer: Prof. Dr. Herbert Kuchen	Department: School of Business and Economics
16	Misc.: Each semester a set of project seminars with different tasks is offered. They will be presented at the end of the previous semester. After that, the available places will be assigned to the interested students.	

Specialization Information Systems

Module Title english:		Specialization Information Systems						
Course Program:		Bachelor Information Systems PO 2010						
1	Module No: VM WI	State: Elective	Language of Instruction: German					
2	Turn: each term	Duration: 2 terms	Semester: 5, 6	CP: 9	Workload (h): 270			
3	Module Structure:							
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)		
	1	Course	Lecture Information Systems	3	30 h (2 CH)	45		
	2	Seminar	Seminar Information Systems	6	30 h (2 CH)	120		
	3	Seminar	Presentation skills	0	15 h (1 CH)	30		
4	Module Contents:							
	<p>Background and relations to other courses: This specialization deepens the student's knowledge from various other courses, especially those from the first two semesters.</p> <p>Main topics and learning objectives: The module allows students to deepen their knowledge from previous lecture. Therefore, they have to attend one specialization lecture as well as one seminar. Both courses can be held in an integrated manner. Next to these aspects students will learn to deal with scientific writing and scientific literature. The search and appraisal of relevant literature of a field is one cornerstone of this module. Moreover, the results of the students have to be presented. Thus, this module should also focus on the corresponding presentation skills.</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">Themes</td> <td style="width: 50%;">Learning objectives</td> </tr> <tr> <td>Lectures on E-Government, Service Science, Business Process Management, Business Process Modeling, IT Consulting.</td> <td>Students will learn about and apply the concepts and methods of the area of the lecture.</td> </tr> </table>					Themes	Learning objectives	Lectures on E-Government, Service Science, Business Process Management, Business Process Modeling, IT Consulting.
Themes	Learning objectives							
Lectures on E-Government, Service Science, Business Process Management, Business Process Modeling, IT Consulting.	Students will learn about and apply the concepts and methods of the area of the lecture.							
5	<p>Learning outcomes:</p> <p>Academic: Students deepen their knowledge of selected areas (see above) and the courses of the first study year. Moreover, the knowledge has to be applied in the seminar thesis.</p> <p>Soft skills: Students will achieve soft skills in the areas of presentation, communication, and creation of scientific output.</p>							
6	Description of possible electives within the modules: none							
7	Examination: Examinations for every part of the module							
8	Relevant Work:							

	Number and Type; Connection to Course	Duration	Part of final mark in %
	Creation, presentation, and defense of seminar thesis	20 pages + 1h presentation	66.7 %
	Exam: Lecture information systems	60 min.	33.3 %
9	Study Work: Number and Type; Connection to Course		Duration
	none		
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.		
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)		
12	Module Prerequisites: none		
13	Presence: Attendance in the lecture is strongly recommended. Attendance in the seminar is mandatory. An attendance of 80% is required.		
14	Use of the module for other course programs: Bachelor Information Systems		
15	Responsible Lecturer: Prof. Dr. Dr. h.c. Jörg Becker	Department: School of Business and Economics	
16	Misc.:		

Specialization Computer Science

Module Title english:		Specialization Computer Science				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: VM Inf	State: Elective	Language of Instruction: German			
2	Turn: each term	Duration: 1 term	Semester: 5, 6	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Special lecture “Computer Science” such as e.g. “Computer Networks”, “Distributed Systems”, “Mainframe Computing” or “IT Security”	3	30 h (2 CH)	45
	2	Seminar	Seminar on Computer Science	6	30 h (2 CH)	120
	3	Seminar	Presentation skills	0	15 h (1 CH)	30
4	Module Contents:					
	Background and relations to other courses:					
	The knowledge and skills in a selected area of computer science are deepened. The students can select from a set of offered subjects. It is assumed that the participants know the concepts taught in the mandatory modules on computer science and that they are able to apply then corresponding methods. It is possible to continue deepening the selected topic when writing the bachelor thesis.					
	Main topics and learning objectives:					
This module enables the students to deepen their knowledge in a selected area of computer science. Possible areas are e.g. “Computer Networks”, “Distributed Systems”, “Mainframe Computing” and “IT Security”. In addition to the new material, the students learn in the seminar how to write a scientific paper on a specific topic based on a previous study of the relevant literature. Moreover, they learn how to present this topic orally in a well-structured and understandable way using state-of-the-art tools (such as e.g. Powerpoint). The required soft skills w.r.t. to presentation technique are conveyed in a private discussion with a tutor.						
	Themes	Learning objectives				
	(e.g.) Computer Networks, Distributed Systems, Mainframe Computing, IT Security	Knowing and being able to apply the concepts and methods of the selected subject.				
	Writing scientific papers	Reading and understanding scientific literature. Summarize the read material in a well-structured, understandable, and precise way in a scientific paper.				
	Presentation	Present the content of the written paper in a well-structured, understandable and precise way using state-of-the-art presentation tools (such as e.g. Powerpoint)				
5	Learning outcomes:					

	Academic: Knowing and being able to apply the concepts of the selected topic. Soft skills: Soft skills: (among others) media competence, time management, rhetoric, presentation skills											
6	Description of possible electives within the modules: none											
7	Examination: Examinations for every part of the module											
8	Relevant Work: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Number and Type; Connection to Course</th> <th style="text-align: left;">Duration</th> <th style="text-align: left;">Part of final mark in %</th> </tr> </thead> <tbody> <tr> <td>Written exam</td> <td>60 min.</td> <td>33.3 %</td> </tr> <tr> <td>Scientific paper + presentation</td> <td>20 pages + 1h</td> <td>66.7 %</td> </tr> </tbody> </table>			Number and Type; Connection to Course	Duration	Part of final mark in %	Written exam	60 min.	33.3 %	Scientific paper + presentation	20 pages + 1h	66.7 %
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none												
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.											
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)											
12	Module Prerequisites: none											
13	Presence: Attendance of the lecture is strongly recommended. Attendance of the seminar is mandatory. An attendance of 80% is required.											
14	Use of the module for other course programs: Bachelor Information Systems											
15	Responsible Lecturer: Prof. Dr. Herbert Kuchen	Department: School of Business and Economics										
16	Misc.: Misc.: The students can select between different offered topics. The available topics are presented at the end of the previous semester. After that, the available places are assigned to the interested students.											

Specialization Quantitative Methods

Module Title english:		Specialization Quantitative Methods				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: VM QM	State: Elective	Language of Instruction: German			
2	Turn: irregularly	Duration: 2 terms	Semester: 5, 6	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	Advances in Quantitative Methods	3	30 h (2 CH)	55
	2	Seminar	Seminar in Quantitative Methods	6	30 h (2 CH)	120
	3	Seminar	Presentation skills	0	15 h (1 CH)	20
4	Module Contents:					
	<p>Background and relations to other courses: The modul deepens insight into a limited topic of QM. The covered topics may vary; frequently, they are subject to actual scientific research and discussion in QM. The lecture is held as a block course; according to the specific topic of the module, it tightens and deepens the mathematical prerequisites that are necessary from modules QM1 to QM4. In the seminar following the lecture, the students learn how to work on an scientific topic of QM starting from the technical literature. Based on the work on this literature, they prepare and give a talk. Soft skills like preparing slides and rhetorical techniques are discussed with the tutor in advance and also following the talk. Moreover, the module serves as a perspective to possible themes of the bachelor thesis.</p> <p>Main topics and learning objectives: The topics vary according to actual scientific questions in QM. Hence, the learning objectives depending on those topics may differ. Anyway, the students should learn to investigate technical literature in QM and understand the application of the specific mathematical models and techniques in economical sciences.</p>					
5	Learning outcomes:					
	<p>Academic: Knowing and being able to apply the concepts of the selected topic.</p> <p>Soft skills: (among others) media competence, time management, rhetoric, presentation skills</p>					
6	Description of possible electives within the modules: none					
7	Examination: Examinations for every part of the module					
8	Relevant Work:					
	Number and Type; Connection to Course		Duration	Part of final mark in %		
	Final Written Exam		60 min.	33.3 %		
Scientific paper + presentation		20 pages + 1h	66.7 %			
9	Study Work:					
	Number and Type; Connection to Course			Duration		

	none	
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.	
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)	
12	Module Prerequisites: none	
13	Presence: Presence is mandatory.	
14	Use of the module for other course programs: Bachelor Information Systems	
15	Responsible Lecturer: Prof. Dr. Heike Trautmann	Department: School of Business and Economics
16	Misc.: The students can select between different offered topics. The available topics are presented at the end of the previous semester. After that, the available places are assigned to the interested students.	

Specialization Business Administration

Module Title english:		Specialization Business Administration				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: VM BWL	State: Elective	Language of Instruction: German			
2	Turn: each term	Duration: 1 term	Semester: 5, 6	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1	Course	BWL11, BWL14, BWL15, BWL16	6	60 h (4 CH)	120
	2	Course / Exercise	BWL13	6	45 h (3 CH)	135
	3	Course / Exercise	BWL7, BWL12	6	60 h (4 CH)	120
	4	Course / Exercise	BWL3, BWL6, BWL10	6	90 h (6 CH)	90
	5		Practical Training	3	90 h (6 CH)	0
4	Module Contents:					
	<p>Background and relations to other courses: This specialization deepens the student's knowledge from various other courses, especially those from business administration and the first two semesters.</p> <p>Main topics and learning objectives: The student can choose from the following courses of the bachelor-studies for business administration:</p> <ul style="list-style-type: none"> • BWL6 Accounting and Taxation (6 CP, SS) • BWL7 Corporate Finance (6 CP, SS) • BWL3 Management Accounting and Control (6 CP, WS) • BWL20 Logistics Management (6 CP, SS) • BWL10 Management and Governance (6 CP, WS) • BWL9 Quantitative Marketing (6 CP, SS) • BWL14 Insurance Economics(6 CP, SS) • BWL11 Advanced Accounting (6 CP, WS) • BWL13 Specialisation in Finance (6 CP, SS) • BWL16 Advanced Management (6 CP, SS) • BWL15 Advanced Marketing (6 CP, SS) • BWL12 Advanced Taxation (6 CP, WS) <p>Besides these courses, students have to absolve a six week internship (15 h/week) in a company with a business orientation.</p>					
5	<p>Learning outcomes:</p> <p>Academic: See description of the corresponding business administration module</p> <p>Soft skills: See description of the corresponding business administration module</p>					
6	Description of possible electives within the modules:					

	none																					
7	Examination: Examinations for every part of the module																					
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none																						
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.																					
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)																					
12	Module Prerequisites: This module cannot be combined with Module VM P (approved internship), as one of the specializations chosen has to comprise a seminar (PO 2010 §7 (2)).																					
13	Presence: See description of the corresponding business administration module																					
14	Use of the module for other course programs: Bachelor Business Administration, Bachelor Information Systems																					
15	<table border="1"> <tr> <td>Responsible Lecturer: Prof. Dr. Dr. h.c. Jörg Becker</td> <td>Department: School of Business and Economics</td> </tr> </table>	Responsible Lecturer: Prof. Dr. Dr. h.c. Jörg Becker	Department: School of Business and Economics																			
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16	Misc.: A written confirmation of the company where the internship took place is necessary. That confirmation has to describe the length of the internship (min 6 weeks, 15 hours per week. Moreover the confirmation should assert that the internship was performed in the area of business administration.																					

Approved Internship

Module Title english:		Approved Internship				
Course Program:		Bachelor Information Systems PO 2010				
1	Module No: VM P	State: Elective	Language of Instruction: German			
2	Turn: each term	Duration: 1 term	Semester: 5, 6	CP: 9	Workload (h): 270	
3	Module Structure:					
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)
	1		Internship and corresponding documentation	9	0 h (0 CH)	270
4	Module Contents:					
	Background and relations to other courses:					
	The students are assumed to know and be able to apply the concepts and methods taught in the compulsory courses. The experience gained in the internship can be helpful when writing the bachelor thesis.					
	Main topics and learning objectives:					
The approved internship offers students the chance to gain practical experience during their study. The core area of the internship shall be Information Systems, Quantitative Methods, Computer Science or Business Administration. After the internship, the participants have to write a report of about 20 pages documenting how they solved the practical problem which was assigned to them. In addition, they have to present their solution in a talk of about 1 hour using contemporary presentation tools (such as e.g. Powerpoint). The subject of the internship has to be confirmed by the tutor before the internship begins.						
	Themes	Learning objectives				
	Internship	Independently getting acquainted with a complex task. Independent application of learned methods and concepts to solve a practical problem.				
	Report	Describing the developed solution of the given problem in a well-structured, understandable, and precise way in a scientific paper.				
5	Learning outcomes:					
	Academic:					
	The students gain experience w.r.t. the practical application of the concepts and methods learned in their study. They learn to align theoretical approaches and practical experience.					
	Soft skills:					
	The students learn to write scientific texts and present their contents orally using contemporary presentation tools (such as e.g. Powerpoint). The required skills such as (among others) media competence, time management, rhetoric, and presentation technique are conveyed in a private discussion with a tutor.					
6	Description of possible electives within the modules:					
	none					
7	Examination: Examinations for every part of the module					
8	Relevant Work:					
	Number and Type; Connection to Course	Duration	Part of final mark in %			

	Report	20 pages	50 %
	Presentation	1h	50 %
9	Study Work: Number and Type; Connection to Course		Duration
	none		
10	Prerequisites for Credit Points: The credit points will be granted after all relevant work and study work have been successfully completed.		
11	Weight of the module grade for the overall grade: 5% (9 of 180 CP)		
12	Module Prerequisites: This module cannot be combined with Module VM BWL (spezialization Business Administration), as one of the specializations chosen has to comprise a seminar (PO 2010 §7 (2)).		
13	Presence: Presence at the collaborating enterprise is mandatory.		
14	Use of the module for other course programs: Bachelor Information Systems		
15	Responsible Lecturer: Prof. Dr. Herbert Kuchen	Department: School of Business and Economics	
16	Misc.: The rules of the examination office have to be taken into account when applying for an internship. Moreover, the subject of the internship has to be confirmed by the tutor, before the internship begins.		

Bachelor Thesis (Information Systems)

Module Title english:		Bachelor Thesis (Information Systems)						
Course Program:		Bachelor Information Systems PO 2010						
1	Module No: BA	State: Compulsory	Language of Instruction: German and English					
2	Turn: each term	Duration: 1 term	Semester: 5, 6	CP: 12	Workload (h): 360			
3	Module Structure:							
	No	Type	Course	CP	Presence (h + CH)	Self-Study (h)		
	1		Bachelor Thesis	12	0 h (0 CH)	360		
4	Module Contents:							
	<p>Background and relations to other courses: The contents of the previous modules will be used in the bachelor thesis.</p> <p>Main topics and learning objectives: The bachelor thesis shall demonstrate that the student is able to solve a given, complex problem independently in a given time frame using scientific methods and that he/she is able to describe the solution in a scientific text. The thesis shall have a size of approximately 40 pages.</p> <table border="1"> <thead> <tr> <th>Themes</th> <th>Learning objectives</th> </tr> </thead> <tbody> <tr> <td>Bachelor thesis</td> <td>Independently getting acquainted with a complex subject and the corresponding literature. Writing a scientific text.</td> </tr> </tbody> </table>					Themes	Learning objectives	Bachelor thesis
Themes	Learning objectives							
Bachelor thesis	Independently getting acquainted with a complex subject and the corresponding literature. Writing a scientific text.							
5	Learning outcomes:							
	<p>Academic: The students gain experience with the application of the learned material to a complex problem. Moreover, they learn to read the relevant literature and to formulate scientific texts.</p> <p>Soft skills: (among others) writing scientific texts, time management, self-competence</p>							
6	Description of possible electives within the modules: none							
7	Examination: Final Module Exam							
8	Relevant Work:							
	Number and Type; Connection to Course	Duration	Part of final mark in %					
	Bachelor Thesis	40 pages	100 %					
9	Study Work:							
	Number and Type; Connection to Course	Duration						
	none							
10	Prerequisites for Credit Points:							

	The credit points will be granted after all relevant work and study work have been successfully completed.	
11	Weight of the module grade for the overall grade: 6.67% (12 of 180 CP)	
12	Module Prerequisites: none	
13	Presence: none	
14	Use of the module for other course programs: Bachelor Information Systems	
15	Responsible Lecturer: Prof. Dr. Herbert Kuchen	Department: School of Business and Economics
16	Misc.:	