
Modulhandbuch

**Computing Science - Master of Education Programme (Vocational and Business
Education)**

im Wintersemester 2022/2023

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Pflichtbereich

inf005 - Software Engineering I

Module label	Software Engineering I
Modulkürzel	inf005
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Aufbaucurriculum - Pflichtbereich • Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule • Bachelor's Programme Mathematics (Bachelor) > Nebenfachmodule • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule (60 KP) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Pflichtbereich • Master's Programme Environmental Modelling (Master) > Mastermodule
Zuständige Personen	<p>Winter, Andreas (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	
Skills to be acquired in this module	<p>The objective of the module is to convey the development and maintainance of large scale software systems. The complete software developing process including requirements collection, software architecture and quality control is observed. The basics of object oriented modelling and software development are enhanced.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none"> • comprehend the different developmental phases of software (especially requirements engineering, software design, software implementation and quality control) • name the tasks of each phase • select appropriate methodical utilities • select suitable methods and utilities for each project phase • understand the advantages of the modelling process with UML • model moderate tasks in UML • understand and develop solutions for given problems by means of development environments <p>Methodological competence The students:</p> <ul style="list-style-type: none"> • structure, document and evaluate problems and solutions with the tools of object oriented modelling • apply methods and techniques of object oriented modelling purposefully <p>Social competence The students:</p> <ul style="list-style-type: none"> • create, present and discuss solutions with modelling techniques - • present and solve modelling problems in teams <p>Self-competence The students: reflect their problem-solving behaviour with regard to the capabilities of software technology</p>
Module contents	The module introduces fundamental terms and concepts in software engineering. This includes: - need for software engineering - activities and process-models in software development - object-oriented modelling, meta modelling - Interdependencies between code and models - requirements elicitation - definition of software architectures - application of software patterns - software quality management - software maintenance, evolution and operation Software engineering tools are presented and applied in practical exercises.
Literatureempfehlungen	Ian Sommerville: Software Engineering, Addison-Wesley Longman, Amsterdam, 10. Ed. 2012 Jochen Ludewig, Horst Lichter: Software Engineering, dpunkt.verlag, 3. Auflage 2013 Helmut Balzert: Lehrbuch der Software-Technik, Spektrum Akademischer Verlag, 3. Auflage 2009 Chris Rupp, Stefan Queins: UML 2 glasklar. Praxiswissen für die UML-Modellierung, Carl Hanser Verlag, 4. Auflage 2012
Links	
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Modullevel / module level	AC (Aufbaucurriculum / Composition)

Modulart / typ of module	Pflicht / Mandatory			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge	- inf030 - inf031			
Examination	Prüfungszeiten	Type of examination		
Final exam of module	At the end of the lecture period or during the lecture period (portfolio)		Written exam or oral exam or portfolio (? 3 services)	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		3	WiSe	42
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				70 h

inf007 - Information Systems I

Module label	Information Systems I
Modulkürzel	inf007
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Aufbaucurriculum - Pflichtbereich• Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule• Bachelor's Programme Economics and Business Administration (Bachelor) > Studienrichtung Wirtschaftsinformatik• Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule (60 KP)• Master Applied Economics and Data Science (Master) > Specialization• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Pflichtbereich
Zuständige Personen	Lehrenden, Die im Modul (Prüfungsberechtigt) Wingerath, Wolfram (Module responsibility)
Prerequisites	
Skills to be acquired in this module	<p>This module introduces the core concepts, languages and architectures of databases. In software systems these concepts are important.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• name the core concepts of the languages and architectures of databases (especially)• select data models• integrate structuring concepts of information systems in their designs <p>Methodological competence The students:</p> <ul style="list-style-type: none">• design database systems appropriately analyse problems from the field of database-supported information systems and solve them appropriately <p>Social competence The students:</p> <ul style="list-style-type: none">• enhance their ability to work in a team <p>Self-competence The students:</p> <ul style="list-style-type: none">• reflect their problem-solving behaviour with regard to the information processing concepts
Module contents	<ul style="list-style-type: none">• Relational data models• Relational algebra and its implementation in SQL (the standard of databases)• Database design on different abstractions (conceptual and logical design)• Normalisation - Data base architectures• Distributed and active databases• Object-oriented, object-related and XML-based database systems
Literatureempfehlungen	<ul style="list-style-type: none">• Ramez Elmasri und Shamkant B. Navathe (2016), Fundamentals of Databases Systems, 7th Revised edition, Pearson/Addison Wesley.
Links	
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Modullevel / module level	AC (Aufbaucurriculum / Composition)

Modulart / typ of module	Wahlmodul / Opportunity			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten		Type of examination	
Final exam of module	At the end of the lecture period		Written or oral exam	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		3	WiSe	42
Exercises		1	WiSe	14
Präsenzzeit Modul insgesamt				56 h

inf600 - Business Informatics I

Module label	Business Informatics I
Modulkürzel	inf600
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Basiscurriculum• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Bachelor's Programme Economics and Business Administration (Bachelor) > Studienrichtung Wirtschaftsinformatik• Bachelor's Programme Sustainability Economics (Bachelor) > Wahlpflichtbereich• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Angewandte Informatik)• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Pflichtbereich
Zuständige Personen	Sauer, Jürgen (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>Business informatics regards itself as an interdisciplinary subject. It connects business administration with computer science. Business informatics also includes information technologies as well as technical subjects and research topics. It is more than just an intersection of research fields and offers e.g. special methods to coordinate corporate strategies and information processing. The module introduces the entire scope of the field of business informatics.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• Describe the key aspects of business informatics• Differentiate business informatics as an interdisciplinary subject from other subjects• Characterise the functionality of essential application systems and management structures, from the strategical to the tactical and operative level.• Consider and evaluate case studies and layout options for the conception, development, implementation, usage and maintenance of operational sociotechnical applications systems <p>Methodological competence The students:</p> <ul style="list-style-type: none">• Model technical and sociotechnical processes using suitable tools• Analyse business processes and the demands on their modification and their technical assistance• Abstract from complex systems in a suitable way to improve the manageability of models <p>Social competence The students:</p> <ul style="list-style-type: none">• Present their solutions in front of other groups• Discuss their outcomes <p>Self-competence The students:</p> <ul style="list-style-type: none">• Develop solutions for case studies in groups• Construct an argument based on aquired knowledge
Module contents	<p>The main topics of business informatics are the presentation and evaluation of configuration options to conceptualise, develop, implement, use and maintain operational sociotechnical application systems. The lecture focusses on information systems of the networked company. Technical, economic, organisational, and psychosocial aspects are considered. The understanding of these relations will be trained by means of case studies taken from Laudon et al. (cf. suggested reading). The lecture gives an overview of the following business informatics fields.</p> <p>-Information systems, (object of BI) -Application systems</p>

- E-Commerce and E-Business
- Ethical, social and political aspects
- Business process integration
- Knowledge management
- Support of decision making
- Reorganisation of companies
- Economic evaluation

For a better understanding of each subject, it is recommended to take specific modules later in the course of studies.

Literatureempfehlungen

- Laudon, Laudon, Schoder (2006): Wirtschaftsinformatik. Eine Einführung. Pearson Verlag Krallmann,
- Frank, Gronau (2002), Systemanalyse im Unternehmen Oldenbourg (Gebundene Ausgabe - Juni 2002)

Links

Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Modullevel / module level	AS (Akzentsetzung / Accentuation)
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht
Lehr-/Lernform / Teaching/Learning method	V+Ü

Vorkenntnisse / Previous knowledge

Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the lecture period	Tasks and active partaking during the exercises / written exam or oral exam

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

inf701 - Computer Science Education II

Module label	Computer Science Education II
Modulkürzel	inf701
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Pflichtmodule• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Pflichtbereich• Master's Programme Computing Science (Master) > Angewandte Informatik
Zuständige Personen	Diethelm, Ira (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Professional competence The students: <ul style="list-style-type: none">• (re-)construct the knowledge of computer science by the method of didactical reduction• differentiate the development of computer science and evaluate this development with current trends for class• select computer science education approaches for lesson planning, organisation and implementation Methodological competence The students: <ul style="list-style-type: none">• (re-)construct core concepts of lesson planning for computer science education requirements Social competence The students: <ul style="list-style-type: none">• present self-developed lesson plans and lesson materials• discuss lesson plans regarding computer science education concepts• accept opinions and criticism• provide constructive feedback Self-competence The students: <ul style="list-style-type: none">• adapt computer science education concepts for lesson planning• reflect on their self-perception with regard to the conception of computer science education
Module contents	The lecture will focus on the requirements and challenges of computer science education in grammar school (German: Gymnasium). Main focus: <ul style="list-style-type: none">• Didactical (re-)construction of computer science knowledge, especially its didactical reduction• Didactical categorisation of computer science and the development, importance and evaluation of computer science in school• Scheduling, organisation and implementation of computer science in class
Literatureempfehlungen	<ul style="list-style-type: none">• Humbert, Ludger: Didaktik der Informatik. Wiesbaden: B. G. Teubner, 2005.• Further literature will be announced in the lecture.
Links	http://elearning.uni-oldenburg.de
Language of instruction	German
Duration (semesters)	1 Semester

Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten		Type of examination	
Final exam of module	End of lecture period		Exercise and und 1 seminar paper or 1 oral exam	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

inf712 - Current Topics in Computer Science Education I

Module label	Current Topics in Computer Science Education I
Modulkürzel	inf712
Credit points	3.0 KP
Workload	90 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Pflichtmodule • Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Pflichtbereich • Master's Programme Computing Science (Master) > Angewandte Informatik
Zuständige Personen	<p>Diethelm, Ira (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	
Skills to be acquired in this module	<p>This module integrates current developments in the field in adequate study courses.</p> <p>Professional competences The students:</p> <ul style="list-style-type: none"> • define and contrast a computer science part, in which they are specialised, in detail or evaluate computer science in general • recognise and evaluate applied techniques and methods of their subject and are aware of their limits • identify, structure and solve problems/tasks, also in new or developing subject areas • apply state of the art and innovative methods to solve problems, if necessary from other disciplines • are aware of the current limits and contribute to the development of computer science research and technology • discuss and evaluate recent computer science developments <p>Methodological competences The students:</p> <ul style="list-style-type: none"> • examine tasks with technical and research literature, write an academic article and present their solutions academically • evaluate problems/tasks, including new or developing subject areas of their discipline and apply computer science methods for solutions and research • schedule time processes and resources <p>Social competences The students:</p> <ul style="list-style-type: none"> • communicate with users and experts convincingly <p>Self-competences The students:</p> <ul style="list-style-type: none"> • pursue the overall and special computer science development critically • develop and reflect self-developed hypotheses to theories independently
Module contents	See assigned course description
Literaturempfehlungen	As announced in course
Links	
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	unregelmäßig
Module capacity	unlimited
Modullevel / module level	AS (Akzentsetzung / Accentuation)
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht
Lehr-/Lernform / Teaching/Learning	S oder V

method

Vorkenntnisse / Previous knowledge

Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the lecture period	Presentation or oral exam
Form of instruction	Course or seminar	
SWS	2	
Frequency	SoSe oder WiSe	
Workload Präsenzzeit	28 h	

Recht und Gesellschaft

inf851 - Computer Science and Society

Module label	Computer Science and Society
Modulkürzel	inf851
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	

- Bachelor's Programme Biology (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Business Administration and Law (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Business Informatics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Business Informatics (Bachelor) > Wahlbereich Informatik, Kultur und Gesellschaft
- Bachelor's Programme Chemistry (Bachelor) > Säule "Überfachliche Professionalisierung" more...
- Bachelor's Programme Comparative and European Law (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Computing Science (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Computing Science (Bachelor) > Wahlbereich Informatik, Kultur und Gesellschaft
- Bachelor's Programme Economics and Business Administration (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Economics and Business Administration (Bachelor) > Studienrichtung Wirtschaftsinformatik
- Bachelor's Programme Education (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Engineering Physics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Environmental Science (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Intercultural Education and Counselling (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Mathematics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Physics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Physics, Engineering and Medicine (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Social Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Bachelor's Programme Sustainability Economics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Art and Media (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Biology (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Chemistry (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Dutch Linguistics and Literary Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Economic Education (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Economics and Business Administration (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Education (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Elementary Mathematics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme English Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Gender Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme General Education (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme German Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme History (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Material Culture: Textiles (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Mathematics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Music (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Philosophy / Values and Norms (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Physics (Bachelor) > Säule "Überfachliche Professionalisierung"

- Dual-Subject Bachelor's Programme Politics-Economics (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Protestant Theology and Religious Education (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Slavic Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Social Studies (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Special Needs Education (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Sport Science (Bachelor) > Säule "Überfachliche Professionalisierung"
- Dual-Subject Bachelor's Programme Technology (Bachelor) > Säule "Überfachliche Professionalisierung"
- Fach-Bachelor Pädagogisches Handeln in der Migrationsgesellschaft (Bachelor) > Säule "Überfachliche Professionalisierung"
- Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Pflichtmodule
- Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule
- Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Recht und Gesellschaft

Zuständige Personen

Lehrenden, Die im Modul (Prüfungsberechtigt)

Lehrenden, Die im Modul (Module responsibility)

Prerequisites

Skills to be acquired in this module

Graduates of the module Informatik und Gesellschaft know the history of the development of Information technology and its impact on society and are familiar with issues of data protection.

They will be able, individually or in a team, to analyze the ethical and socio-political implications of different areas and applications of computer science and develop a reasoned own position on this, in particular concerning their professional responsibilities as computer scientists.

They have learned to present the results of their work convincingly and suitable for their target group using appropriate media and they are able to organize events such as workshops or small conferences for that purpose.

Professional competence

The students:

- reflect on the ethical and societal aspects of selected areas of computer science
- create and design websites
- create and manage documents in a team

Methodological competence

The students:

- explore methods of structured teamwork
- organize project work
- make presentations with different media

Social competence

The students:

- develop a subject area as a team
- teach a bigger audience to appreciate their knowledge
- discuss their observations and opinions with others

Self-competence

The students:

- reflect their role in a team
 - reflect their role as computer scientists in society
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Module contents

In brief, topics like the following are covered:

- Computer Crime
- Computer Games

- Data Protection
- Electronic Democracy
- Ethics in Computer Science
- History of Information Technology
- Use of information technology at school
- Internet - integration or division of society?
- Artificial Intelligence
- Manipulation by War Games
- Open Source Software
- Robots in Society
- Trustworthy Systems

Literaturempfehlungen

- See reference books Informatik und Gesellschaft in BIS.
- Joseph Weizenbaum, 2001: Die Macht der Computer und die Ohnmacht der Vernunft.
- H. Klaeren u.a., (Eds.), 1999: Tübinger Studientexte Informatik und Gesellschaft. Universität Tübingen.
- J. Friedrich, Th. Herrmann, M. Peschek, A. Rolf (Hrsg.), 1995: Informatik und Gesellschaft. Spektrum.

Links	http://www.informatik.uni-oldenburg.de/~iug			
Language of instruction	German			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Reference text	The topics for the teams are assigned during the first week of the semester			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	Ergänzung/Professionalisierung			
Lehr-/Lernform / Teaching/Learning method	S+P			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten	Type of examination		
Final exam of module	During semester and at the end		Portfolio (5-6 partial performances)	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Seminar		2	WiSe	28
Practical training		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

wir806 - Information Technology Law

Module label	Information Technology Law			
Modulkürzel	wir806			
Credit points	6.0 KP			
Workload	180 h			
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Wahlbereich Informatik, Kultur und Gesellschaft • Bachelor's Programme Computing Science (Bachelor) > Wahlbereich Informatik, Kultur und Gesellschaft • Master Applied Economics and Data Science (Master) > Specialization • Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Recht und Gesellschaft more... • Master's Programme Business Administration, Economics and Law (Master) > Basismodule • Master's Programme Business Administration, Economics and Law (Master) > Mantelmodule (MPO2020) • Master's Programme Business Administration, Economics and Law (Master) > Schwerpunktmodule RdW - Recht • Master's Programme Business Informatics (Master) > Module der Wirtschafts- und Rechtswissenschaften (Master) • Master's Programme Computing Science (Master) > Nicht Informatik 			
Zuständige Personen	<p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p> <p>Louven, Sebastian (Module counselling)</p>			
Prerequisites				
Skills to be acquired in this module	<p>Upon completion of the module, students will be able to:</p> <ul style="list-style-type: none"> • deal with all legal questions arising from the use of information and communication technology in all sectors of society, • identify legal issues arising from the use of information and communication technology, • draft solutions for these legal questions. 			
Module contents	Internet law; IT contracts law			
Literaturempfehlungen	Köhler, Fetzer, Recht des Internet, 8. Aufl., 2016 Redeker, IT-Recht, 6. Aufl., 2017			
Links				
Language of instruction	German			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level				
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht			
Lehr-/Lernform / Teaching/Learning method				
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten	Type of examination		
Final exam of module	during term	presentation and handout, written exam or oral exam		
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2		28
Seminar		2		28
Präsenzzeit Modul insgesamt				56 h

Praktische Vertiefung der Informatik

inf009 - Database Practical

Module label	Database Practical
Modulkürzel	inf009
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP)• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Praktische Informatik)• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik
Zuständige Personen	Grawunder, Marco (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>The objective of this module is to gather practical experience on databases and information systems. The students get an overview of the technical realisation, implementation and optimisation of a professional database management system.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• Realise, implement and program data base systems• Program and implement database-oriented system routines• Implement optimisation goals in the modelling phase• Administer professional database systems (installation, maintenance and adjustment)• Recognise database systems' performance problems and are able to fix them with according methods• Organise and control processes of database systems <p>Social competence The students:</p> <ul style="list-style-type: none">• Solve database system problems in a team <p>Self-competence The students:</p> <ul style="list-style-type: none">• Acknowledge the limits of their ability to cope with pressure during the implementation and are aware of failures• Reflect their self-perception
Module contents	<p>The module "Practical Course Databases" is a related practical course of the module "Information Systems I". The objectives of this module are special technical concepts of a database system and practical solutions in database programming and optimisation.</p> <p>Contents of this module are:</p> <ul style="list-style-type: none">• System-oriented database management programming,• Implementation of catalogue systems,• Optimisation strategies based on parallelisation and partitioning requirements
Literatureempfehlungen	Ramez Elmasri und Shamkant B. Navathe (2007). Fundamentals of Databases Systems. Fifth Edition, Pearson/Addison Wesley. Held Andrea (2005), Oracle 10g Hochverfügbarkeit Addison-Wesley. Held Andrea (2015), Oracle 12c New Features Addison Wesley.

Feuerstein Steven, Pribyl Bill, Dawes Chip (2007).
Oracle PL/SQL. 4. Auflage, O'Reillys Taschenbibliothek

Links	http://www-is.informatik.uni-oldenburg.de/227/	
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	jährlich	
Module capacity	unlimited	
Modullevel / module level	AS (Akzentsetzung / Accentuation)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	P	
Vorkenntnisse / Previous knowledge	Informationssysteme I Betriebssystemkenntnisse	
Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the lecture period	Oral exam
Form of instruction	Practical training	
SWS	4	
Frequency	WiSe	
Workload Präsenzzeit	56 h	

inf014 - Operating Systems Practical

Module label	Operating Systems Practical
Modulkürzel	inf014
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP)• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik
Zuständige Personen	<p>Theel, Oliver (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	
Skills to be acquired in this module	<p>The aim of this module is to get practical experience in the field of analysis, design, and implementation methods of components of operating systems and their interactions.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• Familiarise with complex software systems• Implement hardware-related components of operating systems• Describe parallel system operation executions• Understand the basic concepts of the programming language C++• Identify software errors systematically, especially regarding parallel software• Work in teams• Use UNIX standard software to solve problems• Recognise the advantage of working with virtual machines <p>Methodological competence The students:</p> <ul style="list-style-type: none">• Are aware of the challenges in handling operating systems• Transfer operating system concepts to a practical context• Analyse different solutions to a problem wrt. their properties• Select the most suitable solution <p>Social competence The students:</p> <ul style="list-style-type: none">• Solve problems in small teams• Present their solutions to all teams• Discuss their different solutions within their own team and among all teams <p>Self-competence The students:</p> <ul style="list-style-type: none">• Accept criticism• Organise the workflows within their teams• Question their potential solutions in the light of criticism received• Identify own shortcomings in their initial ability to successfully transfer theory to praxis
Module contents	<p>The contents of this module are:</p> <ul style="list-style-type: none">• Analysis of a rudimentary operating system• Design and implementation of a process management subsystem• Design and implementation of process synchronisation mechanisms• Design and implementation of a virtual memory management subsystem• Design and implementation of a file subsystem or dialog subsystem
Literatureempfehlungen	Patterson and Hennessy, Computer Organization and Design, 3rd edition, Morgan Kaufmann, 2007

Links

Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	jährlich	
Module capacity	unlimited	
Reference text	Associated with the modules: <ul style="list-style-type: none">• Betriebssysteme I• Betriebssysteme II• Verteilte Systeme	
Modullevel / module level	AS (Akzentsetzung / Accentuation)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	P	
Vorkenntnisse / Previous knowledge	- Betriebssysteme I - Betriebssysteme II - Programmiersprachen: C, Assembler	
Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the semester	Active participation / work report and oral exam
Form of instruction	Practical training	
SWS	4	
Frequency	WiSe	
Workload Präsenzzeit	56 h	

inf018 - Media Processing

Module label	Media Processing
Modulkürzel	inf018
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	

- Bachelor's Programme Biology (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Business Administration and Law (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik
- Bachelor's Programme Business Informatics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Chemistry (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer" more...
- Bachelor's Programme Comparative and European Law (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik
- Bachelor's Programme Computing Science (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Economics and Business Administration (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Education (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Engineering Physics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Environmental Science (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Intercultural Education and Counselling (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Mathematics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Physics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Physics, Engineering and Medicine (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Social Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Bachelor's Programme Sustainability Economics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Art and Media (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Biology (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Chemistry (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Computing Science (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP)
- Dual-Subject Bachelor's Programme Dutch Linguistics and Literary Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Economic Education (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Economics and Business Administration (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Education (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Elementary Mathematics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme English Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Gender Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme General Education (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme German Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme History (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Material Culture: Textiles (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"

Studierende musisch-künstlerischer Fächer"

- Dual-Subject Bachelor's Programme Mathematics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Music (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Philosophy / Values and Norms (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Physics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Politics-Economics (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Protestant Theology and Religious Education (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Slavic Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Social Studies (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Special Needs Education (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Sport Science (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Dual-Subject Bachelor's Programme Technology (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Fach-Bachelor Pädagogisches Handeln in der Migrationsgesellschaft (Bachelor) > PP "Medieninformatik für Studierende musisch-künstlerischer Fächer"
- Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Praktische Informatik)
- Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik
- Master's Programme Business Informatics (Master) > Akzentsetzungsmodule der Informatik

Zuständige Personen

Boll-Westermann, Susanne (Module responsibility)

Lehrenden, Die im Modul (Prüfungsberechtigt)

Prerequisites

Skills to be acquired in this module

The students can explain the basics of image processing and know which algorithms exist for the basic tasks in image processing and how these are applied.

The students can apply basic methods of image processing they learned in the lecture to solve simple problems.

Professional competence:

The students

- can name basic characteristics of digital media
- can explain the most common methods for encoding and compressing images, video and audio
- can describe basic procedures for image enhancement, feature extraction, feature description, image analysis and image comprehension

Methodological competence:

The students

- can recognize and evaluate image properties and decide for suitable image processing methods
- can select existing software packages for simple image processing problems, as well as use and customize them for their specific task
- can implement simple image and media processing functions in a higher programming language (e.g., C ++)

Social competence

The students:

- can plan, implement, and document a software project in team work
- can present the results of their work to an audience and adequately respond to criticism and questions

Self competence

The students:

- can accept and learn from mistakes made during the process of implementation
-

Module contents

The lecture covers the technologies of media processing. In particular, the lecture focuses on image processing chain from digital imaging, through image pre-/and postprocessing, and image storage to image analysis. In addition to compression techniques and color space theory (RGB, HSV, YUV, CIEXYZ, ...), the topics of the lecture include image enhancement, feature extraction, feature description, image analysis and image comprehension. The lecture furthermore discusses the encoding and analysis of video and audio.

Literaturempfehlungen

Wilhelm Burger und Mark James Burge. Digitale Bildverarbeitung: Eine Einführung mit Java und Image, J. Springer, 2006.

Literatur im Handapparat der Abteilung in der Bibliothek. Linkliste im Lernmanagementsystem zu den einzelnen Themen der Vorlesung.

Links	http://medien.informatik.uni-oldenburg.de/lehre
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	Annually
Module capacity	unlimited
Reference text	Useful previous knowledge: Solid programming skills in Java and/or C++, practical informatics. Interest in media processing

Modullevel / module level	AS (Akzentsetzung / Accentuation)
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht
Lehr-/Lernform / Teaching/Learning method	1V + 1Ü
Vorkenntnisse / Previous knowledge	Gute Programmierkenntnisse in PythonJava und/oder JavaC++, Interesse an Medienverarbeitung.

Examination	Prüfungszeiten	Type of examination
Final exam of module	Die Vorstellung des praktischen Projektes an einem Projekttag aller Kleingruppen findet direkt im Anschluss an die Vorlesungszeit statt. Die mündliche Prüfung findet in den ersten beiden Wochen nach Ende der Vorlesungszeit statt. Etwaige Nachprüfungen finden am Ende der vorlesungsfreien Zeit statt. Der genaue Zeitplan kann den Webseiten der Abteilung sowie den Angaben im Lernmanagementsystem Stud.IP entnommen werden.	Project and oral exam The portfolio comprises two graded submodules: <ul style="list-style-type: none"> • Practical group project which progress has to be presented regularly during the tutorials. • Oral exam on the topics of the lecture. Practical project and oral exam count 50% each to the final grade. Both practical project and oral exam must be passed individually.

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Project		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

inf021 - Advanced Java Technologies

Module label	Advanced Java Technologies
Modulkürzel	inf021
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP)• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik
Zuständige Personen	Boles, Dietrich (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>The objective of this module is to introduce advanced concepts and technologies of the Java Standard Edition. The students will be able to use the technologies to implement large applications.</p> <p>Professional competence: The students: - name the essential packages of the JDK class library - structure large programs properly and implement them extensively - look up required classes in the JDK-Library and solve problems with these classes - structure their programs properly - understand and interpret large programs of other students - evaluate the quality of large programs related to their maintainability, reuseability and expandability</p> <p>Methodological competence: The students: - search for solutions to specific problems in the internet independently</p> <p>Social competence: The students: - discuss own and solutions of other students</p> <p>Self-competence: The students: - reflect their problem-solving behaviour and take up new solutions, e.g. from the internet</p>

Module contents

A selection of the following subjects is presented during the lectures:

- GUI (AWT, Swing, JavaFX)
- Java-Basics and Collection-API
- Graphics and multimedia
- Events
- Model-View-Control (MVC)
- Threads
- Internationalization, localization
- Reflection
- IO, Files
- Tools (compiler, classloader, printer, ...)
- Storage technologies (XML and serialization)
- Distributed programming (sockets and RMI)
- Databases (JDBC)
- Compression
- Security concepts

Alternatively, a single topic is explored in depth.

As part of the exercises, individual programming tasks or a larger programming task will be worked on. The tasks are related to the topic of the individual lecture contents.

Literaturempfehlungen	list of links in the learning management system		
Links			
Language of instruction	German		
Duration (semesters)	1 Semester		
Module frequency	every Semester		
Module capacity	unlimited		
Reference text			
Modullevel / module level	AS (Akzentsetzung / Accentuation)		
Modulart / typ of module	Wahlpflicht / Elective		
Lehr-/Lernform / Teaching/Learning method	VL + Ü		
Vorkenntnisse / Previous knowledge	Objektorientierte Programmierung		
Examination	Prüfungszeiten	Type of examination	
Final exam of module	throughout the semester	practical exercises As part of the exercises, the students work on practical programming tasks. For this purpose, new subtasks with reference to the respective lecture content have to be worked on weekly.	
Form of instruction	Comment	SWS	Frequency
			Workload of compulsory attendance
Lecture		2	WiSe
Exercises		2	SoSe oder WiSe
Präsenzzeit Modul insgesamt			84 h

inf202 - Computer Engineering Practical

Module label	Computer Engineering Practical
Modulkürzel	inf202
Credit points	6.0 KP
Workload	180 h

Verwendbarkeit des Moduls

- Bachelor's Programme Biology (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Business Administration and Law (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Business Informatics (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Chemistry (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Comparative and European Law (Bachelor) > Fachnahe Angebote Informatik more...
- Bachelor's Programme Computing Science (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Economics and Business Administration (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Education (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Engineering Physics (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Environmental Science (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Intercultural Education and Counselling (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Mathematics (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Physics (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Physics, Engineering and Medicine (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Social Studies (Bachelor) > Fachnahe Angebote Informatik
- Bachelor's Programme Sustainability Economics (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Art and Media (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Biology (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Chemistry (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP)
- Dual-Subject Bachelor's Programme Dutch Linguistics and Literary Studies (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Economic Education (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Economics and Business Administration (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Education (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Elementary Mathematics (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme English Studies (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Gender Studies (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme General Education (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme German Studies (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme History (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Material Culture: Textiles (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Mathematics (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Music (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Philosophy / Values and Norms (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Physics (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Politics-Economics (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Protestant Theology and Religious Education (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Slavic Studies (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Social Studies (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Special Needs Education (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Sport Science (Bachelor) > Fachnahe Angebote Informatik
- Dual-Subject Bachelor's Programme Technology (Bachelor) > Fachnahe Angebote Informatik
- Fach-Bachelor Pädagogisches Handeln in der Migrationsgesellschaft (Bachelor) > Fachnahe Angebote Informatik
- Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Technische Informatik)
- Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule
- Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik

Zuständige Personen

Mikschl, Alfred (Module responsibility)

Lehrenden, Die im Modul (Prüfungsberechtigt)

Prerequisites	Empfehlung: inf200 „Grundlagen der Technischen Informatik
Skills to be acquired in this module	<p>Diese Veranstaltung versetzt die Studierenden in die Lage, informationstechnische Systeme zu analysieren, einzelne Komponenten von Rechnern zu verstehen, sie zu entwerfen und zu optimieren sowie qualifiziert über domänenspezifischen Hardwareentwurf zu diskutieren.</p> <p>Fachkompetenz: Die Studierenden</p> <ul style="list-style-type: none"> • beschreiben einzelne Komponenten von Rechnern • entwerfen und optimieren einzelne Komponenten von Rechnern • entwerfen und optimieren Automaten • spezifizieren und implentieren autonome Systeme <p>Methodenkompetenz Die Studierenden</p> <ul style="list-style-type: none"> • synthetisieren Rechnerarchitekturen • können Methoden des Hardwareentwurfs auf verschiedene Systeme transferieren <p>Sozialkompetenz Die Studierenden</p> <ul style="list-style-type: none"> • diskutieren qualifiziert über Hardware <p>Selbstkompetenz Die Studierenden</p> <ul style="list-style-type: none"> • sind dazu in der Lage, ihren Kenntnisstand klar gegen Fachkräfte verwandter Disziplinen abzugrenzen

Module contents	Dieses Modul ist der praktische Teil der Veranstaltung Einführung in die Technische Informatik	
Literaturempfehlungen	Skript zur Veranstaltung, Patterson, D.A., Hennesy, J.L.:Computer Organisation and Design: The Hardware/Software Interface	
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	Jedes Sommersemester	
Module capacity	unlimited	
Modullevel / module level	AC (Aufbaucurriculum / Composition)	
Modulart / typ of module	Wahlpflicht / Elective	
Lehr-/Lernform / Teaching/Learning method	P	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	Am Ende der Vorlesungszeit	PK
Form of instruction	Practical training	
SWS	4	
Frequency	SoSe	
Workload Präsenzzeit	56 h	

inf406 - Laboratory Real-Time Systems

Module label	Laboratory Real-Time Systems
Modulkürzel	inf406
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik
Zuständige Personen	<p>Olderog, Ernst-Rüdiger (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	Theoretische Informatik I und II
Skills to be acquired in this module	<p>The students learn about methods and tools, and how to apply, specify, simulate, verify, and implement real-time systems (RTS). The students gain hands-on experience using tangible Mini-Robots (Lego Mindstorms).</p> <p>Professional competence The students:</p> <ul style="list-style-type: none"> • implement RTS with Lego Mindstorm Robots NXT • simulate and verify RTS on the basis of real-time automata with the model checker UPPAAL • apply the tool Moby/RT to specify and simulate RTS on the basis of PLC-Automata, and to translate them into Java-Code for Lego Mindstorms NXT and into UPPAAL <p>Methodological competence The students:</p> <ul style="list-style-type: none"> • realise control tasks with Lego Mindstorms • specify RTS as networks of real-time automata and verify them with UPPAAL • design RTS using Moby/RT • realise systematically sophisticated time-dependent control tasks with Moby/RT, Lego Mindstorms, and UPPAAL <p>Social competence The students:</p> <ul style="list-style-type: none"> • solve tasks in a team • present solutions and discuss them <p>Self-competence The students:</p> <ul style="list-style-type: none"> • recognise (sub-)problems of RTS and are responsible for their realisation
Module contents	<p>Real-time-systems are systems, where the time at which an output is generated or at which data are read is of importance. Compared to usual programming methods, RTS models are extended by the additional dimension of time. An example for a RTS is an airbag in a car, which needs to be triggered at the right moment of time, not too early and not too late, because the effect of the airbag is useful only for a few hundredths of seconds.</p> <p>The course introduces methods and tools which are then practically applied to specify, verify, and implement RTS. The students gain hands-on experience using Mini-Robots (Lego-Mindstorms) to implement RTS.</p>
Literatureempfehlungen	E.-R. Olderog, H. Dierks: Real-Time Systems: Formal Specification and Automatic Verification, Cambridge University Press, 2008
Links	
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	unregelmäßig
Module capacity	unlimited
Modullevel / module level	AS (Akzentsetzung / Accentuation)
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht

Lehr-/Lernform / Teaching/Learning method	P	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the lecture period	exercises
Form of instruction	Practical training	
SWS	4	
Frequency	WiSe	
Workload Präsenzzeit	56 h	

inf517 - Introduction to Energy Informatics

Module label	Introduction to Energy Informatics	
Modulkürzel	inf517	
Credit points	3.0 KP	
Workload	90 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik 	
Zuständige Personen	<p>Nieße, Astrid (Module responsibility)</p> <p>Lehrenden, Die im Modul (Module responsibility)</p>	
Prerequisites		
Skills to be acquired in this module	<p>The students learn to identify the borders of their disciplinary background when going to the field. Additionally, they learn to identify research questions and how to approach them.</p> <p>**Professional competence** The students learn to identify the borders of their disciplinary background when going to the field. Additionally, they learn to identify research questions and how to approach them.</p> <p>**Methodological competence** The students will know how computer science methods can be applied to energy systems and energy research.</p> <p>**Social competence** The Students discuss in an interdisciplinary context in an appreciative manner.</p> <p>**Self-competence**</p>	
Module contents	<p>This module gives an overview about different topics in the field of energy informatics.</p> <p>In the lecture, the role of computer science in the energy domain is presented on the base of different topics to illustrate the links between energy technology and management and computer science. Some examples are:</p> <ul style="list-style-type: none"> - Energy markets - Network planning & operations management - Demand side management and flexibility - Virtual power plants 	
Literatureempfehlungen		
Links	https://elearning.uni-oldenburg.de/dispatch.php/search/module/index/9e704dec6675f3883775288a849ef867?sterm=inf517	
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency		
Module capacity	unlimited	
Modullevel / module level	BW (Bereichswahlmodul / Range selection)	
Modulart / typ of module	Wahlpflicht / Elective	
Lehr-/Lernform / Teaching/Learning method		
Vorkenntnisse / Previous knowledge	Grundlagenwissen im Bereich der Energietechnik bzw. der Informatik kann eingebracht werden, stellt aber keine Vorbedingung dar.	
Examination	Prüfungszeiten	Type of examination
Final exam of module	At the end of the semester	Exam
Form of instruction	Lecture	
SWS	2	
Frequency	SoSe	

Workload Präsenzzeit

28 h

inf800 - Proseminar in Computer Science

Module label	Proseminar in Computer Science	
Modulkürzel	inf800	
Credit points	3.0 KP	
Workload	90 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Aufbaucurriculum - Pflichtbereich • Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik 	
Zuständige Personen	<p>Diethelm, Ira (Module responsibility)</p> <p>Nießé, Astrid (Module responsibility)</p> <p>Sauer, Jürgen (Module responsibility)</p> <p>Lehrenden, Die im Modul (Module counselling)</p>	
Prerequisites	Studierende im den Bachelor-Studiengängen der Informatik sowie Master of Education Informatik	
Skills to be acquired in this module	<p>Supported by a lecturer the students familiarise with a given topic by literature research. They understand and evaluate the relevance of the literature. After this evaluation the students present and discuss their solutions academically.</p> <p>**Professional competence**: The students:</p> <ul style="list-style-type: none"> - Characterise and apply computer science basics (algorithms, data structures, programming, basics of practical, technical and theoretical computer science) - Define und describe essential mathematical, logical and physical basics of computer science - Define and illustrate the core disciplines of computer science (theoretical, practical and technical computer science) <p>**Methodological competence**: The students:</p> <ul style="list-style-type: none"> - Examine problems, use formal methods to phrase them and analyze them appropriately - Evaluate problems by the use of technical and scientific literature - Reflect on a scientific topic and write a scientific seminar paper under guidance and present their findings <p>**Social competence** The students:</p> <ul style="list-style-type: none"> - Communicate considerably and appropriately with users and experts - Use presentation methods <p>**Self-competence** The students:</p> <ul style="list-style-type: none"> - Plan their informatical actions independently - Reflect their contributions critically and discuss them with users and experts - Collect and update their knowledge independently 	
Module contents	according to the assigned task	
Literaturempfehlungen	according to the assigned task	
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	halbjährlich	
Module capacity	unlimited	
Reference text	Choose one of the seminaire courses of the module.	
Modullevel / module level		
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	S	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	Am Ende des Semesters und nach Absprache	Presentation
Form of instruction	Seminar	
SWS	2	

Frequency SoSe oder WiSe

Workload Präsenzzeit 28 h

inf803 - Special Topics in Computer Science I

Module label	Special Topics in Computer Science I	
Modulkürzel	inf803	
Credit points	6.0 KP	
Workload	180 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik • Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik 	
Zuständige Personen	Lehrenden, Die im Modul (Prüfungsberechtigt)	
Prerequisites		
Skills to be acquired in this module	<p>This module integrates current computer science developments within appropriate study courses.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none"> • Know recent technological or scientific computer science developments • Transfer computer science methods and development models to IT application area requirements • Evaluate the possibilities and limitations of computer science methods and tools and apply them appropriately <p>Methodological competence The students:</p> <ul style="list-style-type: none"> • Review problems, formulate them with formal models and explore them appropriately • Identify and present (one or more) computer science problem solutions • Select and evaluate appropriate tools and methods • Examine problems with technical and scientific literature <p>Social competence The students:</p> <ul style="list-style-type: none"> • Work in a team <p>Self-competence The students:</p> <ul style="list-style-type: none"> • Plan their informatical actions independently 	
Module contents	According to the assigned task	
Literatureempfehlungen	According to the assigned task	
Links		
Languages of instruction	German, English	
Duration (semesters)	1 Semester	
Module frequency	halbjährlich	
Module capacity	unlimited	
Modullevel / module level	AS (Akzentsetzung / Accentuation)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	2 Veranstaltungen aus V, Ü, S, P, PR	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	Exercises or presentation or oral exam or written exam	
Form of instruction	VA-Auswahl	

SWS	4
Frequency	SoSe oder WiSe
Workload Präsenzzeit	56 h

inf804 - Special Topics in Computer Science II

Module label	Special Topics in Computer Science II	
Modulkürzel	inf804	
Credit points	6.0 KP	
Workload	180 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik • Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik 	
Zuständige Personen	Lehrenden, Die im Modul (Prüfungsberechtigt)	
Prerequisites		
Skills to be acquired in this module	<p>This module integrates current computer science developments within appropriate study courses.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none"> • Know recent technological or scientific computer science developments • Transfer computer science methods and development models to IT application area requirements • Evaluate the possibilities and limitations of computer science methods and tools and apply them appropriately <p>Methodological competence The students:</p> <ul style="list-style-type: none"> • Review problems, formulate them with formal models and explore them appropriately • Identify and present (one or more) computer science problem solutions • Select and evaluate appropriate tools and methods • Examine problems with technical and scientific literature <p>Social competence The students:</p> <ul style="list-style-type: none"> • Work in a team <p>Self-competence The students:</p> <ul style="list-style-type: none"> • Plan their informatical actions independently 	
Module contents	According to the assigned task	
Literaturempfehlungen	According to the assigned task	
Links		
Languages of instruction	German, English	
Duration (semesters)	1 Semester	
Module frequency	halbjährlich	
Module capacity	unlimited	
Modullevel / module level	AS (Akzentsetzung / Accentuation)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	2 Veranstaltungen aus V, Ü, S, P, PR	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	Exercises or presentation or oral exam or written exam	
Form of instruction	VA-Auswahl	

SWS	4
Frequency	SoSe oder WiSe
Workload Präsenzzeit	56 h

inf808 - Current Topics in Computer Science

Module label	Current Topics in Computer Science	
Modulkürzel	inf808	
Credit points	3.0 KP	
Workload	90 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik • Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Praktische Vertiefung (60 KP) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Praktische Vertiefung der Informatik 	
Zuständige Personen	Lehrenden, Die im Modul (Prüfungsberechtigt)	
Prerequisites		
Skills to be acquired in this module	<p>This module integrates current computer science developments within appropriate study courses.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none"> • Know recent technological or scientific computer science developments • Transfer computer science methods and development models to IT application area requirements • Evaluate the possibilities and limits of computer science methods and tools and apply them appropriately <p>Methodological competence The students:</p> <ul style="list-style-type: none"> • Review problems, formulate them with formal models and explore them appropriately • Identify and present (one or more) computer science problem solutions • Select and evaluate appropriate tools and methods • Reflect on a scientific topic and write a scientific seminar paper under guidance and present their findings <p>Social competence The students:</p> <ul style="list-style-type: none"> • Use presentation methods purposefully <p>Self-competence The students:</p> <ul style="list-style-type: none"> • Plan their informatical actions independently • Reflect their contributions critically and discuss them with users and experts • Collect and update their knowledge independently 	
Module contents	According to the assigned task	
Literaturempfehlungen	According to the assigned task	
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	unregelmäßig	
Module capacity	unlimited	
Modullevel / module level	AS (Akzentsetzung / Accentuation)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	1 Veranstaltung aus V, Ü, S, P, PR	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	Exercises or presentation or oral exam or written	

Examination	Prüfungszeiten	Type of examination
Form of instruction	VA-Auswahl	exam
SWS	2	
Frequency	SoSe oder WiSe	
Workload Präsenzzeit	28 h	

Abschlussmodul

mam - Master Thesis and Colloquium

Module label	Master Thesis and Colloquium	
Modulkürzel	mam	
Credit points	24.0 KP	
Workload	720 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Abschlussmodul 	
Zuständige Personen	Diethelm, Ira (Prüfungsberechtigt)	
Prerequisites		
Skills to be acquired in this module	<p>Durch die Anfertigung der Masterarbeit erbringt der/die Studierende den Nachweis, dass er/sie in der Lage ist, komplexe und ganzheitliche Aufgaben der Informatik auf der Grundlage umfassender wissenschaftlicher Erkenntnisse und unter Anwendung des wissenschaftlichen Methodenapparates zu bearbeiten und zu lösen. Die Studierenden haben insbesondere das während des Masterstudiums erworbene Fach- und Methodenwissen sowie ihre Fach- und Sozialkompetenz in die Bearbeitung der Masterarbeit eingebracht und erfolgreich angewandt. Das Masterseminar dient der inhaltlichen und methodischen Diskussion der Masterarbeit. Es dient gleichzeitig dem wissenschaftlichen und praktischen Erfahrungsaustausch und versetzt die Studierenden in den Stand, unterschiedliche Lösungsansätze auf der Basis theoretischer Kenntnis- und Erfahrungshintergründe argumentativ zu reflektieren. Das Masterseminar endet mit einem Kolloquium zur Masterarbeit.</p>	
Module contents	Entsprechendes Thema aus der Informatik	
Literaturempfehlungen	Wird entsprechend des konkreten Themas spezifiziert	
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	halbjährlich	
Module capacity	unlimited	
Modullevel / module level	Abschlussmodul (Abschlussmodul)	
Modulart / typ of module	Pflicht	
Lehr-/Lernform / Teaching/Learning method	S	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module		G
Form of instruction	Seminar	
SWS	2	
Frequency	SoSe und WiSe	
Workload Präsenzzeit	28 h	

Akzentsetzungsbereich

inf010 - Computer Networks

Module label	Computer Networks
Modulkürzel	inf010
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Aufbaucurriculum-Wahlbereich Praktische Informatik• Bachelor's Programme Computing Science (Bachelor) > Wahlpflichtbereich Praktische Informatik• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Praktische Informatik)• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich
Zuständige Personen	Kramer, Oliver (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Professional competence: The students: <ul style="list-style-type: none">• Identify the layers of the ISO/OSI model• Recognise the main concepts and algorithms of each IOS/OSI layer• Assign technical processes to the layers• Classify new technologies to the main concepts of the ISO/OSI model - Compare different methods and approaches of a layer (i.e. TCP and UDP)• Characterise safety-critical aspects of each layer Methodological competence: The students: <ul style="list-style-type: none">• Administer small networks• Characterise safety-critical aspects of networks Social competence: The students: <ul style="list-style-type: none">• work on exercises in small teams Self-competence: The students: <ul style="list-style-type: none">• accept criticism• reflect on their proposed solutions, taking into account the methods taught
Module contents	Contents of this lecture (cf. suggested reading Tanenbaum and Wetherall): <ul style="list-style-type: none">• Introduction to networks and the internet• Physical Layer• Data Link Layer• MAC Sub-Layer• Network Layer• Transport Layer• Session Layer• Presentation Layer• Application Layer• Technologies (Cable and Co)• Nyquist Shannon and Transmissions - CDMA• Hamming & CRC• Stop & wait, go back n, selective repeat• Aloha & CSMA• Ethernet technologies• Wifi• Paket switchen & Dijkstra• IP Adressing & Header• TCP

- UDP
- Buckets & TCP-Reno
- DNS
- Flask
- RSA & PGP
- Firewalls

Literaturempfehlungen	lecture notes - A. Tanenbaum & D. Wetherall: Computernetzwerke, Pearson Studium, 5. Aufl. 2012			
Links				
Language of instruction	German			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten	Type of examination		
Final exam of module	At the end of the lecture period		Written or oral exam	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		3	SoSe	42
Exercises		1	SoSe	14
Präsenzzeit Modul insgesamt				56 h

inf016 - Internet Technologies

Module label	Internet Technologies	
Modulkürzel	inf016	
Credit points	6.0 KP	
Workload	180 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Business Informatics (Bachelor) > Aufbaucurriculum-Wahlbereich Praktische Informatik • Bachelor's Programme Computing Science (Bachelor) > Wahlpflichtbereich Praktische Informatik • Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Praktische Informatik) • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich 	
Zuständige Personen	Boles, Dietrich (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)	
Prerequisites		
Skills to be acquired in this module	<p>The graduates of the module know the basic concepts and technologies of Internet and web applications. They can evaluate the capability of the concepts and technologies to design Internet-based applications. The students will apply these concepts and techniques in a project.</p> <p>**Professional competence** The students:</p> <ul style="list-style-type: none"> • Know basic concepts and technologies of the Internet and the web <p>**Methodological competence** The students:</p> <ul style="list-style-type: none"> • Are able to use the techniques in projects <p>**Social competence** The students:</p> <ul style="list-style-type: none"> • Implement web-based projects in a team <p>**Self-competence** The students:</p> <ul style="list-style-type: none"> • Reflect their own capabilities to develop Internet-based applications 	
Module contents	<p>The module deals with the basic development concepts of Internet-based applications. It covers relevant client technologies of web applications (HTML, CSS, JavaScript), server technologies (forms, servlets, PHP, databases) and technologies for client server communication (AJAX, WebSockets, Web services, Social-Media-APIs)). Additional topics are web design, Internet law, security and web search. The practical exercises of this module consist of the design, implementation and presentation of a comprehensive web application. The topics of the lecture will be applied and deepened in practice.</p>	
Literatureempfehlungen	list of links in the learning management system	
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	every summer semester	
Module capacity	unlimited	
Reference text	Useful previous knowledge: object-oriented programming	
Modullevel / module level	AS (Akzentsetzung / Accentuation)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	V+Ü	
Vorkenntnisse / Previous knowledge	- Objektorientierte Programmierung	
Examination	Prüfungszeiten	Type of examination

Examination	Prüfungszeiten	Type of examination		
Final exam of module	The presentation of partial results of the practical project takes place weekly during the exercises. Final delivery of the final project is one week after the end of the lecture period. The written exam or oral exam take place in the last week of the lecture period or the first week after the end of the lecture period. Any re-examinations take place at the end of the semester break. The exact timetable can be found in the learning management system.	project and written exam or project and oral exam		
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Exercises		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

inf530 - Artificial Intelligence

Module label	Artificial Intelligence
Modulkürzel	inf530
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Akzentsetzungsbereich Praktische Informatik und Angewandte Informatik• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Angewandte Informatik)• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich
Zuständige Personen	Sauer, Jürgen (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>The students are familiar with the basic concepts of artificial intelligence (AI). They know the concept of rational agents and their behavior. They know how to implement expert systems. They also know basic search and problem solving techniques as well as techniques of knowledge representation. The students can compare different problem solving techniques and use them within other problem contexts.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• describe the concept of rational agents and their behavior in an agent environment• name and describe the basic search and problem solving techniques of Artificial Intelligence• describe and implement expert systems• describe basic techniques of knowledge representation <p>Methodological competence The students:</p> <ul style="list-style-type: none">• acknowledge the basic methods of AI• transfer AI methods to other application areas• evaluate AI methods regarding their appropriateness for distinct problem areas• modify and adapt AI methods for specific application areas <p>Social competence The students:</p> <ul style="list-style-type: none">• work in teams• present results to groups <p>Self-competence The students:</p> <ul style="list-style-type: none">• reflect their results with regard to the methods of AI
Module contents	<ul style="list-style-type: none">• Overview of AI• Rational agents and agent based systems• Search and other problem solving techniques• Knowledge representation• Planning
Literatureempfehlungen	<ul style="list-style-type: none">• Russel, S. J.: Norvig, Peter (2012): Artificial Intelligence: A modern Approach, 3rd Ed.• Winston, P.H. (1994): Artificial Intelligence, 3rd Edition

Links

Language of instruction	German			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge	Grundkenntnisse Informatik/Wirtschaftsinformatik			
Examination	Prüfungszeiten		Type of examination	
Final exam of module	At the end of the lecture period		Written or oral exam	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Exercises		2	SoSe	28
Lecture		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

inf604 - Business Intelligence I

Module label	Business Intelligence I
Modulkürzel	inf604
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master Applied Economics and Data Science (Master) > Data Science• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich• Master's Programme Business Informatics (Master) > Akzentsetzungsmodulare der Informatik• Master's Programme Computing Science (Master) > Angewandte Informatik• Master's Programme Engineering of Socio-Technical Systems (Master) > Embedded Brain Computer Interaction• Master's Programme Engineering of Socio-Technical Systems (Master) > Human-Computer Interaction• Master's Programme Engineering of Socio-Technical Systems (Master) > Systems Engineering
Zuständige Personen	Marx Gomez, Jorge (Prüfungsberechtigt) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>Objective of the module/skills: Current module provides basics of business intelligence with focus on enterprises and strong emphasis on data warehousing technologies. Students of the course are provided with knowledge, which reflects current research and development in a data analytic domain.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• name and recognize the role of business intelligence as part of daily business process• being able to analyse advantages and disadvantages of different approaches and methods of the data analytics and being able to apply them in simple case studies• obtain theoretical knowledge about data collection and modelling processes, including most applicable approaches and best practices <p>Methodological competence The students:</p> <ul style="list-style-type: none">• being able to execute typical tasks of business intelligence, and also being able to deepen knowledge on different approaches and methods• gain a hands on experience and being able to understand advantages and disadvantages of different methods and being able to use obtained knowledge in most efficient ways <p>Social competence The students:</p> <ul style="list-style-type: none">• build solutions based on case studies given to the group, for example solving the issue of a factless fact table• discuss solutions on a technical level• present obtained case studies solutions as part of the exercises <p>Self-competence The students:</p> <ul style="list-style-type: none">• critically review provided data and information

Module contents

Data warehouse technology together with business intelligence are increasingly being used by business in order to get better decision support and enrich ongoing processes with data-rich decisions. Data warehouse technology enables an integration of data from heterogeneous sources, whether business intelligence builds data processing on top of it. For instance, business intelligence allows to build reporting on very large volumes of data (including historical) coming primarily from data warehouse.

As part of the current module following contents are taught:

- Definition and scope of business intelligence.
- Procedures and objectives of data warehousing.

- Process of extracting, transforming and loading (ETL) of data.
- Phases of data modelling, data capturing and reporting in conjunction with a plausible case studies/scenarios.
- Prospects for further and evolving topics for business intelligence (e.g. Adaptive Business Intelligence, In-Memory Computing. etc.)
- Introduction to Data Mining.
- Case studies based practical exercises and assessments in order to impart practical knowledge.

Literatureempfehlungen

- Adamson (2010): The complete reference star schema.
- Jensen, Pedersen, Thomsen (2010): Multidimensional Databases and Data Warehousing (Synthesis Lectures on Data Management).
- Loshin (2012): Business Intelligence – The Savvy Manager’s Guide.
- Marx Gómez, Rautenstrauch, Cissek (2008): Einführung in die Business Intelligence mit SAP NetWeaver 7.0.
- Müller, Lenz (2013): Business Intelligence.
- Sabherwal, Becerra-Fernandez (2010): Business Intelligence: Practices, Technologies, and Management

Links	http://www.wi-ol.de			
Languages of instruction	German, English			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	Wahlpflicht / Elective			
Lehr-/Lernform / Teaching/Learning method	V +Ü			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten	Type of examination		
Final exam of module	At the end of the lecture period	Written exam max. 120 minutes		
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

inf608 - eBusiness

Module label	eBusiness
Modulkürzel	inf608
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Business Informatics (Bachelor) > Aufbaucurriculum - Pflichtbereich• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Bachelor's Programme Economics and Business Administration (Bachelor) > Studienrichtung Wirtschaftsinformatik• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Angewandte Informatik)• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich
Zuständige Personen	Marx Gomez, Jorge (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>The module provides an introduction to the "Electronic Business" (e-business). The graduates know the fundamental and current technologies, advanced concepts, applications and competitive strategies of the "Electronic-Commerce" (e-commerce).</p> <p>The knowledge and abilities acquired in this module are directly applicable in study and business. They are deepening the basics from the module „Wirtschaftsinformatik II“. They provide a professional e-business consulting background and the skills to design software products for this area of business in practice.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• Name and discuss the eBusiness key challenges• Discuss the chances of the added value and the changes of commercial models by the internet• Define the concepts of e-business and e-commerce.• Discuss the change of retail trade and the transactions between companies in e-business• Name current payment systems and communication technologies• Discuss the possibilities of the internet in order to simplify the administration and the coordination of internal and external business processes• Characterise the challenges for the management caused by e-business and e-commerce• Differentiate the concepts and conceptualities of e-business• Assess applications with regard to economic points of view• Practically learn how to handle core technologies of e-business <p>Methodological competence The students:</p> <ul style="list-style-type: none">• Assess the core technologies of e-business and e-commerce• Apply methods in case studies <p>Social competence The students:</p> <ul style="list-style-type: none">• Develop case studies on basis of given problems in groups• Present their solutions <p>Self-competence The students:</p> <ul style="list-style-type: none">• Learn about their own limitations while planning and developing e-commerce applications
Module contents	<p>The module provides the following contents:</p> <ul style="list-style-type: none">• The definition of the core e-business concepts and the technical conditions for the implementation• Introduction of the variations of e-commerce, especially the Business-to-Consumer (B2C) and Business-2-Business (B2B) concepts and the current research in this field

- Discussion on the economic aspects of e-business based on the theory of informational added value
- Technological basics of the web and current development technologies for e-commerce web applications and security mechanisms with focus on online-shops and applications (hands-on exercise topics: HTTP, JSP and SQLInjection, PHP, XML, XML-Security, data modelling, Online-Shop development and Online-Shop administration)

Literaturempfehlungen

- Meier, Andreas; Stormer, Henrik: eBusiness & eCommerce – Management der digitalen Wertschöpfungskette. Springer, 2. Auflage, 2008
- Wirtz, Bernd W.: Electronic Business. Springer Gabler, 4. Auflage, 2013
- Köllmann, Tobias: E-Business: Grundlagen Elektronischer Geschäftsprozesse in der Net Economy. Gabler, 4. Auflage, 2010

Links	http://www.wi-ol.de/			
Language of instruction	German			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten		Type of examination	
Final exam of module	At the end of the lecture period		Written or oral exam	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	SoSe	28
Exercises		2	SoSe	28
Präsenzzeit Modul insgesamt				56 h

inf653 - ERP Technologies

Module label	ERP Technologies
Modulkürzel	inf653
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich• Master's Programme Business Informatics (Master) > Akzentsetzungsmodulare der Informatik• Master's Programme Computing Science (Master) > Angewandte Informatik
Zuständige Personen	Marx Gomez, Jorge (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	Learning objectives: <ul style="list-style-type: none">• Generation of understandings into the working approaches and tasks of ERP systems• Examining components of ERP systems• Generating knowledge about important aspects of the operation processes of ERP systems, such as data storage and processing, user management, and system maintenance. Professional competence The students: <ul style="list-style-type: none">• describe ERP systems in compliance with functions and technologies• identify state-of-the-art and future architectures of ERP systems• discuss the usage of core technologies (also in practical case studies, for example with SAP NetWeaver) Methodological competence: The students: <ul style="list-style-type: none">• categorize fundamental technologies in combination with other enterprise-wide information systems• apply the presented methods in practical contexts Social Competence: The students: <ul style="list-style-type: none">• construct solutions to given problems in groups• present solutions to computing science problems before groups Self-competence: The students: <ul style="list-style-type: none">• recognize the limits of their capacity in implementing and customizing of business application systems
Module contents	The module provides the following content: <ul style="list-style-type: none">• Overview of the components of ERP systems and their functionality and administration• In-depth analysis of ERP system architecture under consideration of surface structures and user management in ERP systems, with focus on of data storage, particularly the used data models and database structures, backup and recovery strategies• Deployment of ERP applications in form of application service providing, including the technical characteristics of this business model, especially Special Administration, delimitation and monitoring tasks for systems, which at the same time be provided several customers Lecture will be accompanied by SAP case studies.
Literaturempfehlungen	<ul style="list-style-type: none">• Gronau (2004): Enterprise Resource Planning und Supply Chain Management, Oldenbourg, München• Rautenstrauch, Schulze (2003): Informatik für Wirtschaftswissenschaftler und Wirtschaftsinformatiker, Springer, Heidelberg• Sumner (2005): Enterprise Resource Planning, Prentice Hall

Links	http://www.wi-ol.de			
Language of instruction	German			
Duration (semesters)	1 Semester			
Module frequency	jährlich			
Module capacity	unlimited			
Modullevel / module level	AS (Akzentsetzung / Accentuation)			
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht			
Lehr-/Lernform / Teaching/Learning method	V+Ü			
Vorkenntnisse / Previous knowledge				
Examination	Prüfungszeiten		Type of examination	
Final exam of module	End of lecture period		Practical Exercise and Portfolio	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

inf654 - Mobile Commerce

Module label	Mobile Commerce
Modulkürzel	inf654
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Akzentsetzungsbereich• Master's Programme Business Informatics (Master) > Akzentsetzungsmodulare der Informatik• Master's Programme Computing Science (Master) > Angewandte Informatik
Zuständige Personen	Marx Gomez, Jorge (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>Professional competence The students:</p> <ul style="list-style-type: none">• define and encompass MC• explain the development stages of MC• are aware of the current developments within MC and are able to classify them• get to know technical essentials, functionalities and standards of wireless ICT• assess the fields of application and limitations of wireless ICT• examine the relevant mobile devices and their respective operating systems, know their characteristics and evaluate their fields of application• examine market participants, assess business models, optimize business processes• gain insight into specifics via examples and exercises <p>Methodological competence The students:</p> <ul style="list-style-type: none">• get to know security aspects and specifics of mobile application design• prototypically develop an Android application• prepare and give presentations• develop a concept of a business model for an Android application <p>Social competence The students:</p> <ul style="list-style-type: none">• work on their project in groups of three <p>Self-competence The students:</p> <ul style="list-style-type: none">• reflect their own group-dynamic activities in respect of a mutual goal (successfully finish their project)
Module contents	See above
Literatureempfehlungen	<ul style="list-style-type: none">• Turowski, K.; Poustchi, K.: Mobile Commerce – Grundlagen und Techniken. 1. Aufl., Springer, Heidelberg 2004• Also all materials provided within the lecture
Links	http://vlba.wi-ol.de
Language of instruction	German
Duration (semesters)	1 Semester
Module frequency	jährlich
Module capacity	unlimited
Modullevel / module level	AS (Akzentsetzung / Accentuation)
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht
Lehr-/Lernform / Teaching/Learning	V+Ü

method**Vorkenntnisse / Previous knowledge**

Examination	Prüfungszeiten	Type of examination		
Final exam of module	After the lecture	Portfolio		
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

