
Modulhandbuch

**Computing Science - Master of Education Programme (Hauptschule and
Realschule)**

im Wintersemester 2022/2023

erstellt am 03/02/23

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Mastermodule

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	<p>Diethelm, Ira (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	
Skills to be acquired in this module	<p>Professional competence The students:</p> <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 <p>Methodological competence The students:</p> <ul style="list-style-type: none"> • (re-)construct core concepts of lesson planning for computer science education requirements <p>Social competence The students:</p> <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 <p>Self-competence The students:</p> <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	<p>The lecture will focus on the requirements and challenges of computer science education in grammar school (German: Gymnasium). Main focus:</p> <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

inf714 - Special Topics in Computer Science for Education

Module label	Special Topics in Computer Science for Education	
Modulkürzel	inf714	
Credit points	3.0 KP	
Workload	90 h	
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule 	
Zuständige Personen	<p>Diethelm, Ira (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>	
Prerequisites		
Skills to be acquired in this module	<p>In diesem Modul werden aktuelle Themen mit Schulbezug aus den verschiedenen Gebieten der Informatik vertieft. Diese Themen können z.B. aus den Gebieten Betriebssysteme, Rechnerarchitekturen und Rechnernetze, Prozessmanagement, Versorgungstechnik oder Computational Intelligence sein. Einzelheiten zu Zielen und Inhalten entnehmen Sie bitte der zugeordneten Veranstaltung oder wenden Sie sich direkt an den Lehrenden</p> <p>Ziele des Moduls/Kompetenzen: In diesem Modul werden aktuelle Themen mit Schulbezug aus den verschiedenen Gebieten der Informatik vertieft. Diese Themen können z.B. aus den Gebieten Betriebssysteme, Rechnerarchitekturen und Rechnernetze, Prozessmanagement, Versorgungstechnik oder Computational Intelligence sein. Einzelheiten zu Zielen und Inhalten entnehmen Sie bitte der zugeordneten Veranstaltung oder wenden Sie sich direkt an den Lehrenden</p> <p>Fachkompetenz Die Studierenden: - benennen und differenzieren exemplarisch fortgeschrittene Methoden und Technologien der Informatik, z.B. aus dem Bereich Betriebssysteme, Rechnerarchitekturen und Rechnernetze, Prozessmanagement, Versorgungstechnik oder Computational Intelligence - erkennen die Komplexität von Informatiksystemen und dekonstruieren deren Funktions- und Wirkungsweisen - bewerten die (zukünftige) Entwicklung von Technologien der Informatik und ihre Auswirkungen - identifizieren und formulieren Anforderungen von Informatiksystemen</p> <p>Methodenkompetenz Die Studierenden: - kennen wissenschaftliche Arbeitsmethoden und wenden diese an einem speziellen schulrelevanten Thema der Informatik an, z.B. Kryptographie, Modellierung, Automatisierungstechnik oder Betriebssystemen - recherchieren Methoden und Ansätze zum Lösen informatischer Problemstellungen, wie z.B. Verlässlichkeit, Sicherheit oder Persistenz von Daten - evaluieren Informatiksysteme/Technologien, z.B. unter gesellschaftlichen, ökonomischen und ökologischen Gesichtspunkten</p> <p>Sozialkompetenz Die Studierenden: - präsentieren ihre (Teil-)Ergebnisse - diskutieren getroffene Entscheidung und Ergebnisse ihrer Arbeit - arbeiten in Teams an Problemstellungen</p> <p>Selbstkompetenz Die Studierenden: - reflektieren Kritik und ändern ihr Handeln entsprechend - identifizieren Teilaufgaben und übernehmen Verantwortung für diese</p>	
Module contents		
Literaturempfehlungen		
Links		
Language of instruction	German	
Duration (semesters)	1 Semester	
Module frequency	unregelmäßig	
Module capacity	unlimited	
Modullevel / module level	BC (Basiscurriculum / Base curriculum)	
Modulart / typ of module	je nach Studiengang Pflicht oder Wahlpflicht	
Lehr-/Lernform / Teaching/Learning method	V oder S	
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module	Am Ende der Vorlesungszeit nach Absprache mit dem Lehrenden	PF

Form of instruction

Seminar

SWS

Frequency

SoSe oder WiSe

Workload Präsenzzeit

0 h

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	

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	<p>Kramer, Oliver (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	
Skills to be acquired in this module	<p>Professional competence: The students:</p> <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 <p>Methodological competence: The students:</p> <ul style="list-style-type: none">• Administer small networks• Characterise safety-critical aspects of networks <p>Social competence: The students:</p> <ul style="list-style-type: none">• work on exercises in small teams <p>Self-competence: The students:</p> <ul style="list-style-type: none">• accept criticism• reflect on their proposed solutions, taking into account the methods taught
Module contents	<p>Contents of this lecture (cf. suggested reading Tanenbaum and Wetherall):</p> <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

inf201 - Computer Engineering II

Module label	Computer Engineering II			
Modulkürzel	inf201			
Credit points	6.0 KP			
Workload	180 h			
Verwendbarkeit des Moduls	<ul style="list-style-type: none"> • Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule • Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Wahlpflicht Technische Informatik (30 KP) • 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 			
Zuständige Personen	<p>Nebel, Wolfgang (Module responsibility)</p> <p>Wüstefeld, Manuela (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>			
Prerequisites				
Skills to be acquired in this module	<p>The module qualifies students to analyse computer architectures, understand computer components, design and optimize computers and components, and to discuss domain-specific hardware design.</p> <p>**Professional competence** The students:</p> <ul style="list-style-type: none"> - describe computer components - design and optimise computer components - understand manufacturing processes for VLSI circuits <p>**Methodological competence** The students:</p> <ul style="list-style-type: none"> - analyse computer architectures <p>**Social competence** The students:</p> <ul style="list-style-type: none"> - discuss computer hardware and manufacturing processes competently - are able to transfer their knowledge of hardware design to other domains different from computer science <p>**Self-competence** The students:</p> <ul style="list-style-type: none"> - are able to assess their own competences in relation to qualified personnel from related domains 			
Module contents	<p>This module is the second part of the introduction to technical computer science. Typical examples of combinatory circuits, like an adder, are used to illustrate modular design methods. More advanced design methods are demonstrated on sequential circuits, i.e. circuits with memory. Additionally in this part, the electrotechnical fundamentals of computing are taught. The construction and the manufacturing process of digital components is explained and the scope of the introduction to computer architecture is broadened to cover embedded systems as well.</p>			
Literatureempfehlungen	<p>- Lecture notes - Oberschelp, W., Vossen, G.: Rechneraufbau und Rechnerstrukturen; Oldenbourg Verlag</p> <p>- Gajski, D.: Principles of Digital Design; Prentice Hall 1997 - Patterson, D.A., Hennesy, J.L.: Computer Organisation and Design: The Hardware/Software Interface; 2. Edition; Morgan Kaufman Publishers, 1997 - Tannenbaum, A.S.: Structured Computer Organization ; 4. Edition; Prentice Hall, 1999 Additional literature will be mentioned in the lectures</p>			
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	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

Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Präsenzzeit Modul insgesamt				56 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

Fränze, Martin Georg (Module responsibility)

Janßen, Detlef (Module responsibility)

Lehrenden, Die im Modul (Prüfungsberechtigt)

Prerequisites

Empfehlung: inf200 „Grundlagen der Technischen Informatik“

Skills to be acquired in this module

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.

Fachkompetenz:

Die Studierenden

- beschreiben einzelne Komponenten von Rechnern
- entwerfen und optimieren einzelne Komponenten von Rechnern
- entwerfen und optimieren Automaten
- spezifizieren und implementieren autonome Systeme

Methodenkompetenz

Die Studierenden

- synthetisieren Rechnerarchitekturen
- können Methoden des Hardwareentwurfs auf verschiedene Systeme transferieren

Sozialkompetenz

Die Studierenden

- diskutieren qualifiziert über Hardware

Selbstkompetenz

Die Studierenden

- 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

inf207 - Electrical Engineering

Module label	Electrical Engineering
Modulkürzel	inf207
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Computing Science (Bachelor) > Akzentsetzungsbereich - Wahlbereich Informatik• Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Wahlpflicht Technische Informatik (30 KP)• 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's Programme Computing Science (Master) > Interdisziplinäre Module
Zuständige Personen	Hein, Andreas (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">• Analyse linear electrical networks (direct current and alternating current)• Name basic concepts to calculate and to use electrical and magnetic fields• List the characteristics of simple electrical elements (two terminal networks)• Calculate the parameters of simple electrical networks/wirings• Apply computer based analysing tools• Design and implement simple networks/wirings <p>Methodological competence: The students:</p> <ul style="list-style-type: none">• Transfer calculation methods onto complex dynamic systems• Implement electrical system models <p>Social competence: The students:</p> <ul style="list-style-type: none">• Present solutions for specific questions <p>Self-competence: The students:</p> <ul style="list-style-type: none">• Reflect their solutions by using methods learned in this course
Module contents	<ul style="list-style-type: none">• Basic concepts (electric dimensions and units)• Network elements• Calculation of linear direct current networks (Ohms law, Kirchhoff's circuit law, superposition principle)• Characteristics, calculations and representations of electric and magnetic fields• Construction elements (capacitor and coil)• Extensions of periodical dimensions dependent on time, pointer representation, calculations with complex root-mean-square value pointers
Literatureempfehlungen	<p>essential:</p> <ul style="list-style-type: none">• slides• Albach: Grundlagen der Elektrotechnik 1 und 2. Pearson Studium, 2004. <p>recommended:</p> <ul style="list-style-type: none">• Hagmann, G.: Grundlagen der Elektrotechnik. AULA-Verlag, 2002.

- Hagmann, G.: Aufgabensammlung zu den Grundlagen der Elektrotechnik. AULA-Verlag, 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		Modul Analysis II oder Numerik		
Examination		Prüfungszeiten		Type of examination
Final exam of module		At the End of the Semester		Hands-on exercises / written exam 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

inf401 - Foundations of Theoretical Computer Science

Module label	Foundations of Theoretical Computer Science
Modulkürzel	inf401
Credit points	6.0 KP
Workload	180 h
Verwendbarkeit des Moduls	<ul style="list-style-type: none">• Bachelor's Programme Computing Science (Bachelor) > Aufbaumodule• Bachelor's Programme Mathematics (Bachelor) > Nebenfachmodule• Dual-Subject Bachelor's Programme Computing Science (Bachelor) > Wahlpflicht Theoretische Informatik (30 KP)• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Pflichtmodule• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule
Zuständige Personen	Olderog, Ernst-Rüdiger (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>Introduction to the theory of automata, formal languages, computability, and complexity</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• Know different classes of languages (e.g. regular and context-free languages)• Know automata models corresponding to the respective language classes (e.g. finite automata, pushdown automata, Turing machines)• Construct automata, Turing machines, and grammars for given tasks• Know equivalent formalisations of the concept of algorithm• Classify functions as algorithmically computable and problems as algorithmically decidable• Know and recognize undecidable problems• Evaluate the complexity of algorithms• Know problems that are solvable deterministically or nondeterministically in polynomial time <p>Methodological competence The students:</p> <ul style="list-style-type: none">• Learn about the power of abstract models of computation <p>Social competence The students:</p> <ul style="list-style-type: none">• Work together in small groups to solve problems• Present solutions to problems to groups of other students <p>Self-competence The students:</p> <ul style="list-style-type: none">• Learn persistence in pursuing difficult tasks• Learn precision in writing down solutions
Module contents	<p>In the first part of the course, different classes of languages are introduced (regular and context-free languages). For each class a matching automata model is presented (finite automata, pushdown automata). Various properties are proven for the introduced classes of languages and models of automata.</p> <p>In the second part of the course, we examine which functions are computable and which problems are decidable. To this end, the concept of algorithm is formalised. Turing machines and grammars turn out as equivalent approaches. We show that there are problems that are undecidable. Many of these problems are of practical interest.</p> <p>The third part of the course deals with the complexity of algorithms, i.e. how much time and space is required to solve a problem. In particular, we consider problems that are solvable in polynomial time, either deterministically or non-deterministically. These problems are classified as P and NP.</p>
Literatureempfehlungen	<ul style="list-style-type: none">- essentiell: Skript "Grundbegriffe der Theoretischen Informatik", jeweils in aktueller Ausgabe- empfohlen: Schöning: "Theoretische Informatik kurzgefasst", 5. Auflage, Spektrum, 2008- Gute Sekundärliteratur: Hopcroft, Motwani, Ullman: "Einführung in die Automatentheorie, Formale Sprachen

und Komplexitätstheorie", Pearson, 2002 (ein Klassiker...)

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		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	WiSe	42
Exercises		1	WiSe	14
Präsenzzeit Modul insgesamt				56 h

inf403 - Cryptology

Module label	Cryptology
Modulkürzel	inf403
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) > Wahlpflicht Theoretische Informatik (30 KP)• Master of Education Programme (Gymnasium) Computing Science (Master of Education) > Wahlpflichtmodule (Theoretische Informatik)• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule
Zuständige Personen	Lehrenden, Die im Modul (Module responsibility) Lehrenden, Die im Modul (Prüfungsberechtigt)
Prerequisites	
Skills to be acquired in this module	<p>Cryptology is a key technology for the security of worldwide computer nets. Modern cryptographic techniques are used to keep data secret, sign electronic messages, control computer network access, secure electronic financial transactions, protect copyrights, among others. In view of these applications users should be able to assess the efficiency and security of these key technologies. For this purpose, it is important not only to know the function of cryptographic processes, it is also important to understand their mathematical basics. Both is explained in this module.</p> <p>Professional competence The students:</p> <ul style="list-style-type: none">• identify basic concepts of cryptography and explain them by examples• know relevant cryptosystems, apply them and assess their security• are familiar in using mathematical basics of cryptographic algorithms• implement cryptographic algorithms and prove their correctness and estimations of their complexity <p>Methodological competence The students:</p> <ul style="list-style-type: none">• assess the efficiency and security of cryptographic processes• extend their knowledge about algorithms and their complexity• develop their implementation skills in particular the handling of very large numbers• analyze simple encryption using well-known and own techniques <p>Social competence The students</p> <ul style="list-style-type: none">• use the language of mathematics to discuss in groups with different knowledge about problems• present their ideas in an understandable way• expand and improve their own ideas through the proposals of their fellow students <p>Self-competence The students:</p> <ul style="list-style-type: none">• reflect their knowledge about security in IT systems• reflect their knowledge about algorithms and their complexity• experience the development of a new field of knowledge within a short amount of time• discover new applications of mathematical contexts
Module contents	A) Mathematical Basics: Integers; Polynomials; Congruences; Residue Class Rings B) Encryption C) Probability and Perfect Security D) Symmetric Encryption (DES, AES) E) Generation of Prime Numbers F) Public-Key-Encryption G) Factorisation and Discrete Logarithms H) Cryptographic Hash Functions and Digital Signatures I) Identification and Certification
Literatureempfehlungen	Lecture notes; further literature will be announced in the lecture. For attunement: Singh, Simon: The Code Book: Science of Secrecy from Ancient Egypt to Quantum Cryptography. Anchor, 2000.

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	Grundveranstaltungen Mathematik und Informatik			
Examination	Prüfungszeiten		Type of examination	
Final exam of module	At the end of the lecture periode		Written exam	
Form of instruction	Comment	SWS	Frequency	Workload of compulsory attendance
Lecture		2	WiSe	28
Exercises		2	WiSe	28
Präsenzzeit Modul insgesamt				56 h

inf521 - Medical Informatics

Module label	Medical Informatics
Modulkürzel	inf521
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
Zuständige Personen	<p>Kaspar, Mathias (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</p>
Prerequisites	
Skills to be acquired in this module	<p>This module provides an introduction to the medical informatics and medical technology.</p> <p>**Professional competence** The students:</p> <ul style="list-style-type: none"> - know the medical and healthcare computer science applications - know typical IT solutions and infrastructures - know the legal framework to process care data - know medical classifications and nomenclatures and the DRG-System and are able to apply them <p>**Methodological competence** The students:</p> <ul style="list-style-type: none"> - know bio-medical research requirements and patient data privacy methods - know communication standards and apply them in small-scale scenarios - know and apply patient safety and risk management methods - know and apply biosignal and image processing methods <p>**Social competence** The students:</p> <ul style="list-style-type: none"> - Realise the importance of communication during the software development process between developer, customer and user of a successful and secure system. Feedback, request, respectful cooperation and the empathy of other disciplines' working processes are of great importance. <p>**Self-competence** The students:</p> <ul style="list-style-type: none"> - Realise their responsibility as a medical informatic and reflect their impact on patients, medical employers and hospitals (corporates)
Module contents	<ul style="list-style-type: none"> - Medical informatics introduction / medical documentation - Medical documentation / progression of disease - Healthcare information systems - Terminology and classification / Medical controlling - Image processing / interoperability and communication standards - Medical data privacy - Medical research - Analyses of information system data - Decision making support and process management - MI/MT patient safetiness (Regulatory Affairs) - Telemedicine / Customer Health informatics - Medical technology introduction, biomedical technology - Biosignal processing, sensor technology - Robotics, prosthetics
Literatureempfehlungen	<p>- Jan van Bemmel , M.A. Musen , Mark A. Musen (Hrsg.): Handbook of Medical Informatics. Springer, Heidelberg 1997 - Christian Johner und Peter Haas (Hrsg.): Praxishandbuch IT im Gesundheitswesen - Carl Hanser Verlag München 2009 - Dugas, Schmidt: Medizinische Informatik und Bioinformatik. Springer Verlag, Berlin, 2003</p>
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		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

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.

Literaturempfehlungen

- 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

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. Spinger Gabler, 4. Auflage, 2013
- Kollmann, 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

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
-

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

Literatureempfehlungen

- 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 (Gymnasium) Computing Science (Master of Education) > Pflichtmodule • Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Mastermodule more... • Master of Education Programme (Vocational and Business Education) Computing Science (Master of Education) > Recht und Gesellschaft • 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) > Module aus anderen Studiengängen 			
Zuständige Personen	<p>Rott, Peter (Module responsibility)</p> <p>Lehrenden, Die im Modul (Prüfungsberechtigt)</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	<p>Köhler, Fetzer, Recht des Internet, 8. Aufl., 2016</p> <p>Redeker, IT-Recht, 6. Aufl., 2017</p>			
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

Abschlussmodul

mam - Master Thesis and Colloquium

Module label	Master Thesis and Colloquium	
Modulkürzel	mam	
Credit points	21.0 KP	
Workload	630 h	
Verwendbarkeit des Moduls	• Master of Education Programme (Hauptschule and Realschule) Computing Science (Master of Education) > Abschlussmodul	
Zuständige Personen		
Prerequisites		
Skills to be acquired in this module		
Module contents		
Literaturempfehlungen		
Links		
Languages of instruction		
Duration (semesters)	1 Semester	
Module frequency		
Module capacity	unlimited	
Modullevel / module level		
Modulart / typ of module		
Lehr-/Lernform / Teaching/Learning method		
Vorkenntnisse / Previous knowledge		
Examination	Prüfungszeiten	Type of examination
Final exam of module		G
Form of instruction	Seminar	
SWS		
Frequency	SoSe und WiSe	
Workload Präsenzzeit	0 h	

