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Information technology is definitely one of the most rapidly developing degree programmes offered by the Georg-Simon-Ohm University of Applied Sciences. The immense growth of IT and the fascinating technologies associated with it have already found their ways into our daily lives.
At present, approximately 600 students are currently studying Information Technology. 200 students start the degree programme annually. There are 17 professors, 5 technical support employees and visiting guest lecturers from the business world.

1.2 Job Prospects

Excellent job prospects await you as a graduate in information technology. According to a recent study carried out by the Trade Association for Information Technology (Fachverband für Informatik) in conjunction with the Federal Employment Office (Bundesanstalt für Arbeit), by 2005, there will be an additional need for 75,000 qualified specialists in this field in Germany alone.

The employment opportunities for our graduates are above average, both in the region and elsewhere. Fixed contracts are often offered by the companies with which our students write their theses.

Additional regional activities, such as the Bavarian high-tech offensive and software initiative, will lead to even more demand.

1.3 Is IT for me?

As an IT graduate, you can look forward to employment opportunities in all branches of business, engineering and administration. At the University of Applied Sciences, you will receive hands-on, practical training that is based on scientific methods.

You will develop the following skills:

- to understand and design systems that process complex information
- to analyse technical systems and business processes and to prepare for the introduction of IT-systems
- to find user-friendly solutions to problems for IT-systems, in co-operation with users and developers
- to develop and implement IT systems in teams.

The courses place a high emphasis on practical and application aspects.

1.4 Degree Programmes

The Georg-Simon-Ohm University of Applied Sciences offers a wide range of degree programmes.

Bachelor of Science in Computer Science

(Informatik)
Length of studies: 7 sem.
Goals: to master the disciplines of classical information technology
Course contents: programming, software engineering, databases, networking and integration of IT systems, Internet, client/server systems, multidimensional software systems

Bachelor of Science in Information Systems and Management

(Wirtschaftsinformatik)
Length of studies: 7 sem.
Goals: to utilise IT to support complex, integrated business processes
Course contents: both classical IT as well as the fundamentals of business and IT in management

Master of Science in Computer Science

(Informatik)
Length of studies: 3 sem.
Prerequisite: bachelor's degree in computer science (or equivalent degree)
Goals: a graduate level programme to broaden and deepen both theoretical and practical knowledge
Course contents: methods and techniques for the implementation and administration of computer networks and distributed applications.

Master of Science in Information Systems and Management)

(Wirtschaftsinformatik)
Length of studies: 3 sem.
Prerequisite: bachelor's degree in information systems and management (or equivalent degree)
Goals: a graduate level programme to broaden and deepen both theoretical and practical knowledge
Course contents: utilisation of IT from a total systems point of view to support business processes and work flow

Industrial Placements (Internships) – Learning by doing!

Our degree programmes feature integrated internships to give you a chance to get familiar with your future work environment. You'll have the opportunity to put your acquired knowledge and skills to the test in a real-life situation in a company.

1.5 After Graduation

After completing your degree in IT, you'll have a wide variety of career fields to choose from. The number of available fields continues to expand rapidly, due to the constant introduction of new IT devices and the explosion of networking between enterprises and individuals.

Set out below are a few areas of activity of some of our students currently working on their theses (mainly in co-operation with companies) as well as some of our recent graduates:

- administration and visualisation of documents based on distributed objects
- highly robust systems based on Windows NT
- business process modelling, making use of new information and communication technology
- application of e-commerce and multimedia
- testing fuzzy data access methods
- design of a marketing information system for enterprise-wide services
- use of Internet technology to search for information
- use of standard software in enterprises
- complex, workflow-based business processes

II. Structure of **Degree Programmes**

2.1 Bachelor of Science in Computer Science: 1. Basic Studies

Courses	1st Semester		2nd Semester	
	Hours per week	Credits	Hours per week	Credits
General Electives Allgemeinwissenschaftliche Wahlpflichfächer			2	2
English Englisch	2	2	2	2
Business (Introduction) Grundlagen der Betriebswirtschaftslehre	4	5		
Information Technology (Introduction) Grundlagen der Informatik	6	7		
Economics (Introduction) Grundlagen der Volkswirtschaftslehre	2	2		
Information Systems (Introduction) Grundlagen der Wirtschaftsinformatik			4	5
Mathematics I / II Mathematik I / II	6	7	6	7
Programming I / II Programmieren I / II	6	7	6	7
Theoretical Computer Science Theoretische Informatik			6	7
Total	26	30	26	30

Quotation from the Diploma Supplement (4.2 Program requirements):

Practically-oriented computer science program, in which theoretical principles of computer science are applied to practical problems drawn from research and industry.

Students are required to develop skills in planning, design and implementation of networked and integrated IT systems, with a special focus on distributed information and communication. Optimization of the efficiency of IT systems and their applications as well as information security play additional areas of emphasis.

Fundamentals of information technology and information processing systems, programming, mathematics form the basis for the main focus of studies: algorithms and data structures, cryptography and information security, computer architecture, computer networks, operating systems, programming languages, databases, software engineering and architecture, IT applications.

One semester practical placement (internship) in industry as well as a practically-oriented thesis (3 months) is required.

2.1 Bachelor of Science in Computer Science: 2. Main Studies

Courses	3rd Semester		4th Semester		5th Semester		6th Semester		7th Semester	
	Hours per week	Credits	Hours per week	Credits	Hours per week	Credits	Hours per week	Credits	Hours per week	Credits
Algorithms and Data Structures Algorithmen und Datenstrukturen			4	5						
Bachelor Thesis Bachelorarbeit										12
Operating Systems Betriebssysteme			6	7,5						
Databases Datenbanken			6	7,5						
IT and Business Law DV- und Wirtschaftsrecht					2	2,5				
English Englisch	2	2,5	2	2,5						
Elective Courses Fachbezogene Wahlpflichtfächer							12	15	10	12,5
IT Applications (Projects) IT-Anwendungen (Projektarbeit))							4	5	2	2,5
Cryptography and Information Security Kryptographie und Informationssicherheit	6	7,5								
Mathematics III: Statistics Mathematik III: Statistik	4	5								
Mathematics IV: Numerical Methods Mathematik IV: Numerische Methoden			4	5						
Industrial Placement Seminar Praxisseminar					2	2,5				
Industrial Placement Praxistätigkeit						18				
Programming Languages Programmiersprachen							6	7,5		
Project Management Projektmanagement					2	2,5				
Computer Communication Rechnerkommunikation			4	5						
Computer Networks Rechnernetze	4	5								
Computer Organisation Rechnersysteme	6	7,5								
Software Engineering Software Engineering	4	5								
Software Architecture Softwarearchitektur							4	5		
Total	26	32,5	26	32,5	6	25,5	26	32,5	12	27

2.2 Bachelor of Science in Information Systems and Management: 1. Basic Studies

Courses	1st Semester		2nd Semester	
	Hours per week	Credits	Hours per week	Credits
General Electives Allgemeinwissenschaftliche Wahlpflichtfächer			2	2
English Englisch	2	2	2	2
Business (Introduction) Grundlagen der Betriebswirtschaftslehre	4	5		
Information Technology (Introduction) Grundlagen der Informatik	6	7		
Economics (Introduction) Grundlagen der Volkswirtschaftslehre	2	2		
Information Systems (Introduction) Grundlagen der Wirtschaftsinformatik			4	5
Mathematics I / II Mathematik I / II	6	7	6	7
Programming I / II Programmieren I / II	6	7	6	7
Theoretical Computer Science Theoretische Informatik			6	7
Total	26	30	26	30

Quotation from the Diploma Supplement (4.2 Program requirements):

Practically-oriented program in information systems and management, in which theoretical principles of computer science are applied to practical problems drawn from research and industry.

Students are required to learn which prerequisites, principles, methods and tools are necessary for information systems to support complex, integrated business processes from a system-oriented view.
Fundamentals of business, computer science and applied mathematics form the basis for the main focus of studies:

1. Development of information systems for integrated, customer-centered business processes
2. Organizational and informational structures along with their necessary IT support for the efficient and secure supply of information
3. Networked information systems as the central instruments of information and communication, used for the gathering, storage, evaluation and presentation of business data and methods
4. Large quantities of data as the basis for decision support systems. System-orientation, business processes and workflow management systems are presented in the context of globalization.

One semester practical placement (internship) in industry as well as a practically-oriented thesis (3 months) is required.

2.2 Bachelor of Science in Information Systems and Management: 2. Main Studies

Courses	3rd Semester		4th Semester		5th Semester		6th Semester		7th Semester	
	Hours per week	Credits	Hours per week	Credits	Hours per week	Credits	Hours per week	Credits	Hours per week	Credits
Algorithms and Data Structures Algorithmen und Datenstrukturen	4	5								
Architecture of Business Information Systems Architektur betrieblicher Anwendungssysteme							4	5		
Bachelor Thesis Bachelorarbeit										12
Operating Systems and Computer Architecture Betriebssysteme/Rechnerarchitektur			4	5						
Databases Datenbanken			6	7,5						
Elective Courses Fachbezogene Wahlpflichtfächer							8	10	10	12,5
Business Process Management Geschäftsprozessmanagement							4	5		
Information Management Informationsmanagement							4	5		
IT Applications in Business (Projects) IT-Anwendungen (Projektarbeit)							4	5	2	2,5
Cryptography and Information Security Kryptographie und Informationssicherheit	6	7,5								
Mathematics III: Statistics Mathematik III: Statistik			4	5						
Decision Support Methods Methoden der Entscheidungsunterstützung							4	5		
Industrial Placement Seminar Praxisseminar					2	2,5				
Industrial Placement Praxistätigkeit						18				
Project Management Projektmanagement					2	2,5				
Computer Communication Rechnerkommunikation			4	5						
Accounting and Controlling Rechnungswesen und Controlling	6	7,5								
Software Engineering Software Engineering	4	5								
Business I (Advanced) Spezielle Betriebswirtschaftslehre I	6	7,5								
Business II (Advanced) Spezielle Betriebswirtschaftslehre II			6	7,5						
IT and Business Law Wirtschaftsprivatrecht					2	2,5				
Total	26	32,5	24	30	6	25,5	28	35	12	27

2.3 Master of Science in Computer Science

Courses and Fields	Hours per week	Credits
Master Thesis Masterarbeit		30
English/German Englisch/Deutsch	4	4
Elective Courses in the Field: Theoretical Computer Science Fächergruppe Theoretische Informatik	≥ 12	≥ 15
Elective Courses in the Field: Internet and Digital Media Fächergrupper Internet und digitale Medien	≥ 4	≥ 5
Elective Courses in the Field: Communication and IT Infrastructures Fächergruppe Kommunikation und IT-Infrastrukturen	≥ 4	≥ 5
Elective Courses in the Field: Software Engineering and Software Architectures Fächergruppe Software-Engineering und Software-Architekturen	≥ 4	≥ 5
Elective Courses in the Field: Technical CS and Automation Solutions Fächergruppe Technische Informatik und Automatisierungslösungen	≥ 4	≥ 5
Free Elective Courses Sonstige fachwissenschaftliche Wahlpflichtfächer	≥ 0	≥ 0
IT Project IT- Projektarbeit	4	6
Total	48	90

Quotation from the Diploma Supplement (4.2 Program requirements):

Theoretically-oriented advanced level degree in computer science.
The prerequisite for admission to the master's degree program is completion of a bachelor's degree in computer science (or equivalent), with above-average grades. In the master's program, theoretical knowledge and scientific methods are emphasized in order to strengthen abstract thinking and analytical skills.

Main topics include: theoretical computer science with a focus on security and cryptology, communication and IT infra-structure, software engineering and software architecture, internet and digital media, technical computer science and automation.

A research-oriented thesis (6 months) is required.

2.4 Master of Science in Information Systems and Management

Courses and Fields	Hours per week	Credits
Master Thesis Masterarbeit		30
English/German Englisch/Deutsch	4	4
Elective Courses in the Field: Theoretical Computer Science Fächergruppe Theoretische Informatik	≥ 12	≥ 15
Elective Courses in the Field: Theoretical Business Fächergruppe Theoretische Betriebswirtschaft	≥ 14	≥ 17,5
Elective Courses in the Field: Work Flow and Business Processes Fächergruppe Workflow und Geschäftsprozesse	≥ 8	≥ 10
Free Elective Courses Frei wählbare Fächer	≥ 6	≥ 7,5
IT Project IT-Projektarbeit	4	6
Total	48	90

Quotation from the Diploma Supplement (4.2 Program requirements):

Theoretically-oriented advanced level degree in information systems and management.
The prerequisite for admission to the master's degree program is completion of a bachelor's degree in information systems, computer science (or equivalent), with above-average grades.
In the master's program, theoretical knowledge and methods are emphasized in order to strengthen abstract thinking and analytical skills.

The main focus is on information systems for the support of business processes and workflows.
Main topics include the theory of business, theoretical computer science, business processes and workflows, IT applications.

A research-oriented thesis (6 months) is required.

2.5 Elective Courses (Selection)

The offer of elective courses is subject to frequent and short-term changes.
The current list of electives is available at the URL
www.informatik.fh-nuernberg.de
--> Seiten für Studenten --> Lehrveranstaltungen --> Fachwiss. Wahlpflichtfächer

Courses	Hours per week	Credits	Course is part of the Master programme, but not of the Bachelor programme; only Master students can choose it as an elective
Sensor Technology Angewandte Sensortechnik	2	2,5	
Automation Technology Automatisierungstechnik	2	2,5	
Autonomous Mobility Autonome Mobilität und Manipulation (Servicerobotik)	4	5	
A Business Information System in Practice Ein betriebliches Informationssystem in der Praxis	4	5	
Knowledge-Based Systems and their Application in Business Betriebswirtschaftliche Anwendung wissensbasierter Systeme	2	2,5	
Compilers Compiler	4	5	
Compiler Generators Compilergeneratoren	2	2,5	
IT Applications in Control Technology Computeranwendungen in der Regelungstechnik	4	5	
Consulting, IT Services Consulting, IT Services	2	2,5	
Content Security Contentsicherheit	4	5	
Databases (Advanced) Datenbanken II für Wirtschaftsinformatiker	4	5	
Laser Technology (Introduction) Einführung in die Lasertechnik	2	2,5	
Digital Image Processing Digitale Bildverarbeitung	4	5	
Real-Time Operating Systems Echtzeitbetriebssysteme	4	5	
Data Mining (Introduction) Einführung in Data Mining	4	5	
Electronic Commerce Electronic Commerce	4	5	
English for Information Systems Students Englisch für Wirtschaftsinformatiker	4	5	
Ethernet Analysis Ethernet-Analyse	2	2,5	
Financial Mathematics Finanzmathematik	2	2,5	
Management Führungs- und Entscheidungstechniken	4	5	
Functional Programming Funktionales Programmieren	4	5	
Graphical Data Processing Graphische Datenverarbeitung	4	5	
Multimedia Systems (Introduction) Grundlagen multimedialer Systeme	4	5	
Information Management and IT Controlling Informationsmanagement und Informatik-Controlling	2	2,5	

Courses	Hours per week	Credits	Course is part of the Master programme, but not of the Bachelor programme; only Master students can choose it as an elective
Internet Applications in Business Internet Applications in Business	2	2,5	
Internet Programming Internet-Programmierung mit Java	4	5	
Concepts of Higher Level Languages Konzepte höherer Programmiersprachen	2	2,5	
Logistic Information Systems Logistische Informationssysteme	4	5	
Software Anti-Aging Methoden zur Vermeidung von Software Aging	4	5	
Mobile Data and Multimedia Communication Systems Mobile Daten- und Multimedia-Kommunikationssysteme	2	2,5	
Mobile Radio Networks Mobilfunk	2	2,5	
Information Systems Modelling and Epistemology Modellierung und Erkenntnistheorie	4	5	
Multimedia Programming Multimedia-Programmierung	4	5	
Object-Oriented and Distributed Software Systems Objektorientierte und verteilte Software-Systeme	4	5	
Object-Orientation and Databases Objektorientierung in Datenbanken	2	2,5	
Parallel Computing Parallelrechnen	4	5	
Robotics Robotik	2	2,5	
Internet Security Sicherheit im Internet	4	5	
Security-Relevant Programming Sicherheitskritsches Programmieren / Ada	4	5	
Soft-Computing Softcomputing	4	5	
Software Deployment for Complex Business Processes Softwareeinsatz für komplexe Geschäftsprozesse	4	5	
Software Reliability Softwarezuverlässigkeit	2	2,5	
Tax Law Steuerrecht	2	2,5	
Stochastic Simulation Stochastische Simulation	2	2,5	
System Programming with UNIX Systemprogrammierung unter UNIX	4	5	
Technical Marketing Technisches Marketing	4	5	
Technology and Programming of Standard Business Software Technologie und Programmierung betrieblicher Standardsoftware	4	5	
Decision Support Systems in Business Unternehmensentscheidungen und Informatik-Einsatz	4	5	
Start-ups/Entrepreneurship Unternehmensgründung	4	5	
Scientific Visualisation Visualisierung für wissenschaftliche Anwendungen	4	5	
Information Systems in Small and Medium-sized Enterprises Wirtschaftsinformatik in Klein- und Mittelbetrieben	4	5	
Knowledge-Based Systems (Introduction) Wissensbasierte Systeme	4	5	

Courses	Hours per week	Credits	Course is part of the Master programme, but not of the Bachelor programme; only Master students can choose it as an elective
Workflow Systems Workflow Systeme	4	5	
XML XML	4	5	

III. Contents of **Courses**

G⎽⎽⎽⎽⎽Course only in German
G (E)⎽⎽Course in German, depend-
ing on demand and lecturer
also in English or bilingual
(inquiry recommended)
G/E⎽⎽⎽Course in German and Eng-
lish (bilingual)
E⎽⎽⎽⎽⎽Course only in English

Odd-numbered semesters regularly
in autumn/winter, even-numbered
semesters in spring/ summer. Inde-
pendent of semester number, some
courses are offered two times a year
(inquiry recommended).

3.1 Contents of Basic Courses

Business (Introduction)
Language: **G (E)**
Structure and functions of enter-
prises, fundamentals of accounting

Economics (Introduction)
Language: **G**
Economic systems, market types,
price setting, economic politics, eco-
nomic cycle

English
Language: **G/E**
Basic command of English: listening
and reading comprehension, oral and
verbal fluency, computer science
texts

General Electives
Language: **G/E**
Different courses in fields outside
computer science, for example: for-
eign languages, law, history, politics,
philosophy, art, music, society

Information Systems (Introduction)
Language: **G**
Fundamentals of Information sys-
tems modeling

Information Technology (Introduction)
Language: **G**
The basic functions of computing
automata: computer arithmetics, cir-
cuits, microprogramming, machine-
oriented language

Mathematics I
Language: **G (E)**
Sets and propositions, algebraic
structures, linear algebra, elementary
number theory, combinatorics and
graph theory

Mathematics II
Language: **G (E)**
Advanced calculus: differential and
integral calculus, differential equa-
tions

Programming I/II
Language: **G**
Structured and object-oriented pro-
gram development, C, C++

Theoretical Computer Science
Language: **G**
Automata and formal languages,
computability, decidability, complexity

3.2 Contents of Advanced Courses

Accounting and Controlling
Language: **G**
Principles of orderly accounting, ac-
count charts, bookkeeping of busi-
ness transactions, annual financial
statements, balance-sheet analysis,
controlling systems, requirements to
IT assistance

Algorithms and Data Structures
Language: **G**
Data organisation, data structures,
complexity and efficiency of algo-
rithms, search and sort; memory ad-
ministration, file organisation, tree al-
gorithms, graph algorithms, garbage
collection

Architecture of Business Information
Systems
Language: **G**
Software architectures and technolo-
gies for business information sys-
tems, such as enterprise resource
planning systems

Business I/II (Advanced)
Language: **G**
Functions and processes, such as
materials management, production,
dispatch, marketing, sales manage-
ment, personnel management, fi-
nance and capital accounting and the
use of business information systems

Business Process Management
Language: **G**
Holistic analysis and optimisation,
structuring and restructuring compa-
nies, definition of business proc-
esses, business process models, im-
plementation of process manage-
ment

Computer Communication
Language: **G**
Norms and standards, upper levels of
the OSI model, internet protocols, se-
lected applications and services in
the internet

Computer Networks
Language: **G**
Norms and standards, lower levels of the OSI model, transfer media and protocols (IP, TCP, UDP)

Computer Organisation
Language: **G**
Computer architectures, processors, busses and peripheral devices, system control, memory management (caches), machine language architecture, computer performance

Cryptography and Information Security
Language: **G**
Data integrity, symmetric and asymmetric encryption, authentification, digital signatures, cryptographic protocols, data compression

Databases
Language: **G (E)**
Architecture and functions of database management systems, data definition and manipulation, data modelling and database design, integrity, query languages, transaction management, database applications

Decision Support Methods
Language: **G**
Decision classification, definition and acquisition of decision-relevant data, decision theory and optimisation methods and their application to problems in business, chances and boundaries of formal methods

English
Language: **G/E**
Advanced command of English: listening and reading comprehension, oral and verbal fluency, computer science texts

IT Applications (Projects)
Language: **G (E)**
Concept, design and implementation of application software using selected problems

Information Management
Language: **G**
IT organisation in enterprises, IT controlling, IT business processes, IT service accounting

IT Applications in Business (Projects)
Language: **G/E**
Solution of business problems using IT, conception and optimisation of IT-based business processes using examples from different branches of industry

IT and Business Law
Language: **G**
Introduction to legal areas necessary for development and deployment of IT systems

Mathematics III: Statistics
Language: **G**
Tasks and methods of descriptive and conclusive statistics, basics of probability theory

Mathematics IV: Numerical Methods
Language: **G**
Computational arithmetic, equation systems, interpolation and approximation, integration methods, solution methods for differential equations, solving numerical problems using software

Operating Systems
Language: **G**
Structure and concepts of operating systems: task management, file systems, inter-process communication and synchronisation, memory management, user interfaces, input/output

Operating Systems and Computer Architecture
Language: **G**
Structure and components of computer and processor architectures, structure and concepts of operating systems: task management, file systems, interprocess communication and synchronisation, memory management

Programming Languages
Language: **G**
Procedural, object-oriented, functional and declarative programming; compilers and interpreters

Project Management
Language: **G**
Project planning and control, milestones, net plans, cost estimation, documentation

Software Architecture
Language: **G**
Selection of fundamental concepts of software architectures

Software Engineering
Language: **G (E)**
Phase models, requirements specification, design methods, systems integration and test, software ergonomics, development environments, cost estimation, calculation of efficiency

3.3 Contents of Elective Courses

(Courses and contents are subject to frequent changes, inquiry strongly recommended)

Automation Technology
Language: **G**
Control technology, sensor technology, communication, simulation, algorithms

Autonomous Mobility
Language: **G**
Applications of service robotics, architecture of service robots, environment recognition, planning of movement, localisation

A Business Information System in Practice
Language: **G/E**
Use and customisation of CONCORDE-XAL (developed by Navision-Damgaard)

Compiler Generators
Language: **G**
LEX/YACC, Lexical, syntactical, semantical analysis, code generation

Concepts of Higher Level Languages
Language: **G**
Concepts of Ada, Algol, APL, BCPL, Cobol, Eiffel, Fortran, LISP, Lambda Calculus, Modula, Oberon, Pascal, PL/1, Simula

Consulting, IT Services
Language: **G/E**
Offers, success factors and development trends of IT and management consultants and IT providers

Content Security
Language: **G (E)**
Protection of digital content: digital watermarks, digital fingerprints, pay TV systems, digital rights management, secure operating systems

Databases (Advanced)
Language: **G/E**
Application of databases in business information systems, data warehouses, object-oriented SQL 3

Decision Support Systems in Business
Language: **E**
Simulation (operative planning, scenario analysis), operations research, soft computing (fuzzy logic, genetic algorithms, neural networks, taboo search), data mining

Digital Image Processing
Language: **G/E**
Image sampling, coding and storage, image compression, image reproduction methods, image reproduction methods, image filtering, methods of image recognition

Electronic Commerce
Language: **E**
Exploration of meaningful uses of Electronic Commerce in enterprises, planning an Electronic Commerce presence for an enterprise, Electronic Commerce applications

English for Information Systems Students
Language: **E**
Oral and verbal fluency in English, terminology of academia and information systems

Ethernet Analysis
Language: **G**
Use of network analysers, the filter mechanism of HP 4972, the special programming language for implementing measurement programmes, recording and evaluating network traffic

Financial Mathematics
Language: **G**
Sequences and series, numerical solution of equations, compound interest, depreciations, investments, bonds, repayments

Functional Programming
Language: **G**
Programming language SCHEME, a dialect of LISP, relation to results of theoretical computer science

Graphical Data Processing
Language: **G/E**
Graphics hardware, geometrical transformations, algorithms for representing curves and surfaces, viewing, shading, rendering, modelling techniques, graphics packages. Applications: raytracing, radiosity, animation, complex dynamical systems, Lindenmayer systems, morphing, multimedia

Information Systems in Small and Medium-sized Enterprises
Language: **G/E**
Particularities of planning and using IT applications in small and medium-sized enterprises

Information Systems Modelling and Epistemology
Language: **G/E**
Epistemological circumstances of information systems modelling, psychological and social influences on software development (human factor), critical realism and evolutionary epistemology

Internet Applications in Business
Language: **E**
Exploration of meaningful uses of Internet technology in enterprises, gathering and use of external information via Internet, planning an enterprise-wide Internet profile, Intranets and Extranets

Internet Programming
Language: **G**
Development of distributed applications based on Java and Internet technology in projects, 3-tier software architectures, concept of distributed objects

Internet Security
Language: **G**
Cryptographic methods and their applications in data communication, electronic signatures

IT Applications in Control Technology
Language: **G**
Models of technical systems and processes, structure and properties of control circuits, software for analysing and simulating technical systems, particularly control circuits

Laser Technology (Introduction)
Language: **G**
Properties of laser radiation, architecture and function of different laser types, applications of laser radiation in the field of measurement technology

Logistical Information Systems
Language: **G**
Decision, coordination and execution levels, supply-chain management, quick-response logistics, postponement strategies, application fields and case studies

Management
Language: **G**
Methods for solving management tasks, independent solution in teams, body language

Mobile Data and Multimedia Communication Systems
Language: **G**
Properties of mobile radio transmission and radio transmission in rooms, digital transmission methods for mobile communication, properties and application possibilities of the most important mobile communication systems

Mobile Radio Networks
Language: **G**
GSM networks

Multimedia Programming
Language: **G**
Technical foundations of digital media, software architectures for multimedia applications, implementation of web pages with multimedia elements

Multimedia Systems (Introduction)
Language: **G/E**
Different types of digital media, mathematical foundations and software technology for producing, processing, transmitting and representing digital information, perception and ergonomic presentation of information

Object Orientation and Databases
Language: **G**
Basic concepts of object-oriented and object-relational databases and possibilities of their deployment

Object-Oriented and Distributed Software Systems
Language: **G**
Object-oriented design patterns, advanced design with UML, distributed objects, component software

Parallel Computing
Language: **G**
Parallelisation of IT systems on different levels, types of parallel computers, structure of multi-processor systems, programming models for multi-processor systems, mathematical methods and algorithms

Real-Time Operating Systems
Language: **G**
System services and internal structures, application possibilities and some current products

Robotics
Language: **G**
Architecture and deployment of industrial robots, control technology, programming

Scientific Visualisation
Language: **G**
Techniques for representing measured and synthetic multi-dimensional data, e.g. 3D-transformation, level-of-detail techniques, volume rendering, photo-realistic rendering, virtual reality

Security-Relevant Programming
Language: **G**
Language concepts of Ada which go beyond those of other programming languages and provide the particular reliability of Ada programmes

Sensor Technology
Language: **G**
Physical foundations and functionality of different sensor types, measurement methods, semi-conductor elements, signal processing and sensor systems

Software Deployment for Complex Business Processes
Language: **G/E**
Modelling business processes using the standard software SAP R/3, system architecture, customising, business transactions, evaluation of the SAP system

Software Reliability
Language: **G**
Classical test methods, usage profiles, statistical models

Soft-Computing
Language: **G**
Neural networks, fuzzy logic, evolutionary algorithms, machine learning, rule-based systems, self-organisation

Start-ups/Entrepreneurship
Language: **G**
Preparation and execution of a start-up or a free-lance profession

Stochastic Simulation
Language: **G**
Random numbers, homogeneous and non-homogeneous Poisson processes, Markov chains, queues, statistical analysis of simulated data, variance reduction, applications

System Programming with UNIX
Language: **G**
Process and file management, signals, time services, inter-process communication and synchronisation

Tax Law
Language: **G**
Tax systems, tax objects, legal basis, tax tariffs, tax calculation, tax legislation, income tax, gift and inheritance taxes, value-added tax, corporation tax

Technical Marketing
Language: **G**
Product-customer relationship, sales forecasts, qualitative and quantitative benefits for customers, trade analysis, product portfolio, return of investment

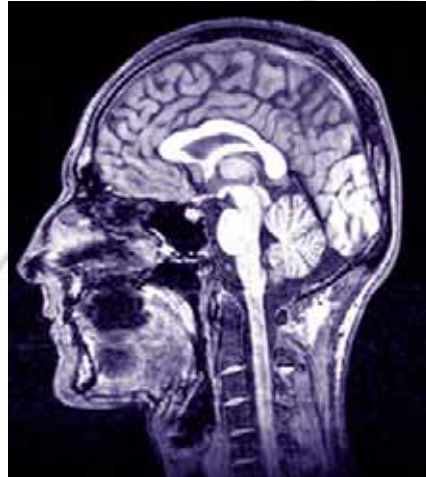## Technology and Programming of Standard Business Software
Language: **G/E**
Technical architecture of the SAP system, the programming language ABAP, using default interfaces

XML
Language: **G**
Theory and application o XML

Assembler Programming
Language: **G**
Machine-oriented programming languages, applications in system-oriented fields

Knowledge-Based Systems (Introduction)
Language: **G**
Diagnostics, construction, simulation, knowledge acquisition, automation, knowledge representation, logics, rules, frames, blackboards, constraints, semantic networks, knowledge processing, inference machine, heuristics

Knowledge-Based Systems and their Application in Business
Language : **G**
This course is based on Knowledge-Based Systems (Introduction): Knowledge management systems, management systems for human resources, risk management systems, expert systems in business applications

Operations Research
Language: **G**
Classification of problems and methods, selected models and solution methods (e.g. optimisation methods, queues, network optimisation, simulation), application to problems of computer science, business, technology

Microprocessor Technology
Language: **G**
Architecture, functions and programming of microprocessor systems, especially memory structures, bus systems and I/O-interfaces to peripheral devices

Real-Time Systems
Language: **G**
Real-time data processing, real-time programming, architecture of real-time systems, implementation of a real-time application

Workflow Systems
Language: **G (E)**
Analysing and modelling business processes, IT assistance of business processes by gaining, processing and editing information along value creation chains, implementation of workflow components, case studies

IV. Information on **ECTS**

4.1 What is ECTS ?

ECTS (European Credit Transfer System) is a project of the European Commission, and provides common procedures to guarantee academic recognition of studies abroad. It provides a way of measuring and comparing learning achievements, and transferring them from one institution to another. The university or the departments decide whether they want to make use of it or not. The ECTS system is based on the principle of mutual trust and confidence between the participating higher education institutions and therefore needs few regulations. Integral part of ECTS are: ECTS-Credits, ECTS-Grades, Learning Agreement and a Transcript of Records.

http://europa.eu.int/comm/education/socrates/ects.html

4.2 What are ECTS-Credits?

ECTS-Credits reflect the student's work load connected with the respective course. Each institution is responsible for the asignment of credits to a particular course they are offering. One semester full-time study corresponds to 30 ECTS-Credits (one year is equivalent 60 ECTS-Credits, and one Trimester 20 ECTS-Credits), which are awarded after a successful completion of the course. ECTS - Credits can only be awarded for courses that form an integral part of the course of study.

4.3 What are ECTS-Grades?

Exams and courses are marked according to the local grading scale. In order to easen a conversion to the grading system of the home university, a descriptive ECTS-Grading-System has been developed. This system does in no way replace the national grading system.

ECTS Grade Definition

A___EXCELLENT
outstanding performance with only minor errors
B___VERY GOOD
above the average standard but with some errors
C___GOOD
generally sound work with a number of notable errors
D___SATISFACTORY
fair but with significant shortcomings
E___SUFFICIENT
performance meets the minimum criteria
F___FAIL
some more work required before the credit can be awarded
FX___FAIL
considerable further work is required

Grading Systems in comparison

GSO FH Nürnberg	(translation)	ECTS-Grade
1 (sehr gut)	very good	A - Excellent
2 (gut)	good	B - Very Good
3 (befriedigend)	satisfactory	C - Good
4 (ausreichend)	sufficient	D - Satisfactory
5 (mangelhaft)	fail	F- Fail

The ECTS-Grade "E" is at present not used in this university.

4.4 How does ECTS work?

After prior consultation of the ECTS co-ordinator, students of the institutions involved can spend part of their studies at certain partner universities.

You will receive an **information package** which consists of the student guide you are holding in your hands and of a handbook produced by the respective department. These handbooks will be placed in the internet in the near future, either on the homepage of the department or on the International Office homepage, or on both. In the handbook, you will find information on the course of study, the department, the contents of the courses offered, the various kinds of examinations and on the ECTS-Credits awarded.
Before leaving, the two universities agree upon the classes the student will take in the learning agreement. Changes of the programme during the stay have to be discussed with both co-ordinators. Once returned to the country of origin, a recognition of credits can be carried out with the help of the transcript of records.
Thus, it is guaranteed that a student does not loose time, when studying abroad.

4.5 Co-ordinators

The University of Applied Sciences Nürnberg introduced ECTS during the academic year 2000/01 in the departments of Mechanical Engineering, Social Work and Business Administration.

The ECTS co-ordinators of the respective departments are:

Fachbereich Maschinenbau und Versorgungstechnik (Mechanical Engineering & Utility Engineering)
Prof. Dr. Peter Heß
Phone: +49-(0)911-5880-1291
Fax: +49-(0)911-5880-5135
E-mail:peter.hess@
fh-nuernberg.de

Fachbereich Sozialwesen (Social Work)
Prof. Dr. Werner Wüstendörfer
Phone: +49-(0)911-5880-2595
Fax: +49-(0)911-5880-6555
E-mail: werner.wuestendoerfer@
fh-nuernberg.de

Fachbereich Betriebswirtschaft (Business Administration)
Prof. Dr. Klaus Stocker
Phone: +49-(0)911-5880-289
Fax: +49-(0)911-5880-6720
E-mail: klaus.stocker@
fh-nuernberg.de

Fachbereich Informatik (Information Technology)
Prof. Dr. Alfred Holl
Phone: +49-(0)911-5880-1211
Fax: +49-(0)911-5880-5800
E-mail: alfred.holl@fh-nuernberg.de

ECTS shall also be introduced in other departments:

Fachbereich Verfahrenstechnik (Process Engineering)
Prof. Dr. Wolfgang Jaumann
Phone: +49-(0)911-5880-1469
Fax: +49-(0)911-5880-5475
E-mail: burkhard.egerer@
fh-nuernberg.de

Fachbereich efi (Electrical Engineering, Mechatronics and Information Technology)
Prof. Dr. Rudolf Lindner
Phone: +49-(0)911-5880-1382
Fax: +49-(0)911-5880-5109
E-mail: rudolf.lindner@fh-
nuernberg.de

Fachbereich Architektur (Architecture)
Prof. Dr. Horst Dittrich
Phone: +49-(0)911-5880-1775
Fax: +49-(0)911-5880-5195
E-mail: horst.dittrich@
fh-nuernberg.de

You can download the information packages here:

http://www.fh-nuernberg.de/fhn/aaa/ects/en/index.html