

Applied Computer Science at the University of Dortmund

Required Exams for Applied Computer Science with a focus on Electrical Engineering

Basic Study (4 semesters best case)

Computer Science

- Computer Architecture certificate
- Hardware Lab certificate
- Software Lab certificate
- Fundamentals of Theoretical Computer Science certificate
- 1 oral exam on Programming and Data Structures & Algorithms

Electrical Engineering

- 1 written exam (4 hrs.) on Fundamentals of Electrical Engineering I and II
- 1 written exam (4 hrs.) on one of the following class pairs:
 - Semiconducting Devices I and II
 - Fundamentals of Information Processing I and II
 - Fundamentals of Electrical Engineering III and IV

Economics

- Fundamentals of Business Calculations certificate
- 1 written exam (2 hrs.) on Business Calculations and Theory of Investment and Financing

Mathematics

- 1 written exam (4 hrs.) on Mathematics for Engineers I, II and III

Main Study (5 semesters best case)

Computer Science

- 3 oral exams – one out of each of the following catalogs:

<u>Catalog A</u>	<u>Catalog B</u>	<u>Catalog C</u>
Operating Systems	Development of Realtime Systems	Artificial Intelligence
Programming Languages and Compilers	Computer Graphics	Operations Research
Computer Architecture	Information Systems	Simulation
Computer Networks and Distributed Systems	Embedded Systems	Systems Analysis
	Software Technology	Efficient Algorithms
- 1 oral exam on any class from the computer science department
- Computer Science and Society Seminar certificate
- another seminar certificate from the computer science, electrical engineering or economics department
- project group certificate
- thesis
 - 4-6 months
 - ~80 pages
 - may be interdisciplinary

Electrical Engineering

- certificate of passing a written exam (4 hrs.) on one of the following class pairs:
 - Semiconducting Devices I and II
 - Fundamentals of Information Processing I and II
 - Fundamentals of Electrical Engineering III and IV
- 1 written exam (4 hrs.) on one of the following class pairs:
 - Computer Engineering I and II
 - High Frequency Technologies I and II
 - Communication Systems I and II
 - Control Systems I and II
 - Energy Technologies I and II
 - Theory of Electrical Engineering I and II
- 2 oral exams on any classes from the electrical engineering department

Economics

- 1 written exam (4 hrs.) on three of the following classes:
 - Computer Science in Business Management I
 - Management I
 - Investment and Financing I
 - Business Calculations and Controlling I
 - Industriebetriebslehre I (*sorry, no idea what this is in english :-)*)
 - Marketing Theory I

Mathematics

- certificate of passing written exam (2 hrs.) on Probability and Statistics

Field of Specialization

- 1 oral exam on any computer science, electrical engineering or economics classes totaling 6 hours per week
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OTHER COMPUTER SCIENCE LECTURES (Fall Semester 2000)

Logical Systems of Computer Science
Theory of Programming: Specification - Verification - Transformation
Complexity Theory
Programming Languages and Compilers II: Generating and Optimizing Code
Geometric Modelling
Technology of Intelligent Systems
Networking Applications
Information Retrieval
Introduction to Biological Computer Science
Queueing Networks
Chip Cards and Cryptographic Methods
Introduction to Genetic Programming
Mobile Communications Systems
Fundamentals of Program Analysis
Test Organization for Complex Systems: Generation, Execution and Analysis
Compilers for Embedded Systems
Current Issues in Efficient Algorithms
Algorithms for Technical Stock Market Analysis
Introduction to Fuzzy Logic
Model Worlds for Discrete, Event-Oriented Systems and their Analysis - an Overview
Programming Parallel Systems
Object-Oriented Analysis and Design in UML
Digital Libraries
Intelligent Systems
Approximation Algorithms
Models for Security
Constraint Languages
Fundamental Concepts of Program Analysis
Controlling Information Flows
Technical Computer Science
New Approaches to Artificial Intelligence
Programmable Molecules
Testing and Security in Component-Based Software Engineering
Programming in C++
Programming in Prolog
Unix / Network Systems

PROJECT GROUP OFFERINGS (Fall Semester 2000)

Process Landscaping: Reference Models for Object-Oriented and Component-Based Software Development Processes
A Web-Based Collaborative Learning Environment - EDO Workspace
Access Protocols for 3rd Generation Mobile Networks
Methodics of Planning Computer Systems: Analysis and Network Planning for Distributed Organizational Units
Dragon Slayer Sword: Secure Transport of Objects in Large Intranets
Robot Football - Image Processing, Path Planning and Robot Control
A Mediated Information System for UNIX System and Network Administration
SIGEL: Development of a Simulator to Visualize GP-evolved Controls for Walking Robot Architectures
Computer Aided Planning of Traffic Networks
Developing an Internet Filter for the Restriction of Content that is Unsuitable for Children
Design and Implementation of an Online Shop
MPlay3: Development of a Long-Play Portable MP3 Player
MedMiner - Machine Learning in Intensive Care

Sample Curriculum: Applied Computer Science with a focus on Electrical Engineering**Basic Study**

Sem	Dpt	Class	Hours/Week	Exam
1	CS	Object-oriented Programming in BETA	4L + 2P	
1	EE	Fundamentals of Electrical Engineering I	2L + 1P	
1	Econ	Fundamentals of Business Calculations	2L + 1P	certificate for written exam
1	Math	Mathematics for Engineers I	4L + 2P	
2	CS	Computer Organization	4L + 2P	certificate for assignments
2	EE	Fundamentals of Electrical Engineering II	2L + 1P	written exam w/ part I
2	Math	Mathematics for Engineers II	4L + 2P	
3	CS	Data Structures and Algorithms	4L + 2P	oral exam w/ Object-Oriented Programming
3	EE	Fundamentals of Electrical Engineering III	2L + 1P	
3	EE	Semiconducting Devices I	2L + 1P	
3	Econ	Theory of Investment and Financing	2L + 1P	
3	Econ	Business Calculations	2L + 1P	written exam w/ Investment and Financing
3	Math	Mathematics for Engineers III	4L + 2P	written exam w/ part I+II
4	CS	Software Lab	2L + lab	certificate for project
4	CS	Hardware Lab	4P	certificate for assignments
4	EE	Fundamentals of Electrical Engineering IV	2L + 1P	written exam w/ part III
4	EE	Semiconducting Devices II	2L + 1P	certificate for written exam w/ part I
4	Math	Probability and Statistics	4L + 2P	certificate for written exam

Main Study

Sem	Dpt	Class	Hours/Week	Exam
5	CS	Operations Research	4L + 2P	
5	CS	Data Base Systems	4L + 2P	
5	EE	Computer Engineering I	2L + 1P	
5	EE	Telecommunications Systems I	2L + 1P	
5	EE	Control Systems I	2L + 1P	
5	Econ	Investment and Financing I	2L + 1P	
6	CS	Embedded Systems	4L + 2P	
6	CS	Simulation	4L + 2P	
6	EE	Computer Engineering II	2L + 1P	written exam w/ part I
6	Econ	Business Calculations and Controlling I	2L + 1P	
6	Econ	Computer Science in Business Management I	2L + 1P	written exam w/ other Econ classes
7	CS	Graphics Systems	4L + 2P	
7	CS	Development of Realtime Systems	4L + 2P	
7	CS	Computer Science and Society	Seminar	certificate for paper
7	CS	Project Group IPSI: Internet Portal System for Insurances		
7	EE	High Speed Networks	2L + 1P	
7	EE	Telecommunications Switching and Transmission Systems I	2L + 1P	
7	EE	Telecommunications Switching and Transmission Systems III	2L + 1P	oral exam w/ High Speed Networks
8	CS	Project Group IPSI: Internet Portal System for Insurances		certificate for project

not done yet – still have a couple exams to take :-)