Master Computer Science - An Introduction

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Faculty IV - Electrical Engineering and Computer Science
TU Berlin

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Faculty IV in Numbers

- Around 60 professors and more than 600 research associates. (PhD students, postdocs,...)
- Around 6000 students, 30 percent from outside Germany.
- Around 40 million Euro external research funding every year.

Formally structured into six institutes:

- Institut für Energie- und Automatisierungstechnik
- Institut für Hochfrequenz- und Halbleiter-Systemtechnologien
- Institut für Telekommunikationssysteme
- Institut für Technische Informatik und Mikroelektronik
- Institut für Softwaretechnik und Theoretische Informatik
- Institut für Wirtschaftsinformatik und Quantitative Methoden
Institutions Closely Connected to Faculty IV

- Einstein Center Digital Future (ECDF)
- Berlin Big Data Center (BBDC)
- Bernstein Center for Computational Neuroscience (BCCN), part of Einstein Center for Neuroscience
- Berlin Daimler Center for Automotive Information Technology Innovations (DCAITI),
- Fraunhofer-Institute FOCUS
- Telekom Innovation Laboratories (T-Labs)
- ...

Moreover, there are numerous basic research projects funded by the German Research Foundation (DFG) and similar funding agencies (ERC, BMBF, ...), typically directly related with the various research groups and to be found on their respective web pages.
Master´s programs at Faculty IV

- Automotive Systems
- Computational Neuroscience
- Computer Engineering
- **Computer Science (Informatik)**
- Elektrotechnik / Electrical Engineering
- ICT Innovation
- Wirtschaftsinformatik / Information Systems Management
Master’s program Computer Science - Structure

120 credit points distributed as follows:

• 60-66 CP Computer Science core studies (Compulsory Electives / Wahlpflichtbereich)
  – 30-42 CP from one of these six study areas:
    ▪ Data and Software Engineering
    ▪ Embedded Systems and Computer Architectures
    ▪ Foundations of Computing
    ▪ Cognitive Systems
    ▪ Digital Media and Human-Computer Interaction
    ▪ Distributed Systems and Networks
  – the rest (complement! 18-36 CP) from the other study areas

• 24-30 CP free choice which shall come from outside Computer Science (Electives / Wahlbereich)

• 30 CP master thesis

• Compulsory: At least one seminar (3CP), at least one project (9CP)
Master’s program Computer Science - Structure

| 1st semester | 30 CP | Compulsory Electives Study area 30-42 CP | Compulsory Electives Study areas 18-36 CP | Electives 24-30 CP |
| 2nd semester | 30 CP |
| 3rd semester | 30 CP |
| 4th semester | 30 CP | Master’s thesis 30 CP |

- See Moses for which modules belong to which study areas.

- At most 30 CP will not be considered for determining the final Master grade:
  - 12 CP of these must come from the electives
  - A quarter of your grades (the worst ones) is ignored for the final grade
  - Note: grade of master thesis is always taken into account for final grade!
Master Tracks

There are some tracks that describe possibilities how to organize the study program with a particular focus.

**Note:** These are only suggestions!

It is not necessary to follow any of these.

A very partial list...

- Science of Intelligence
- Cognitive Systems
- Data Analytics
- ...

Increase of track proposals is planned.
Further Advice

• **Student Advisory Service**
  studienberatung-cs@ceecs.tu-berlin.de; Quick Access 147510

• **Ziik – Centre for International and Intercultural Communication**
  Counselling for international Students
  ziik.tu-berlin.de; Quick Access: 88939

• **Examination board**
  office: Verena Salomo, verena.salomo@tu-berlin.de; Quick Access: 30290

• **Student Initiative of Faculty IV - Freitagsrunde**
  www.freitagsrunde.org

• **ISIS course EECS Studium**

• **Ausbildungskommission** (six students, three professors, three research associates)
  www.eecs.tu-berlin.de/eecs/ausbildungskommission/
Study Abroad Programs

• Programs with International Affairs, Student Mobility and International Student Counselling (INT SB) – Quick Access 5190
  • Exchange Programs Europe / Erasmus+
  • Exchange Programs Overseas

• Exchange programs with Faculty IV – Quick Access 150631
  • i.a. Shanghai Jiao Tong University (China), Universidade Federal do Rio Grande de Sul (UFRGS), Pontifícia Universidade Católica do Rio Grande do Sul PUCRS (Brasil), Norwegian University of Science and Technology (NTNU), Centre for Digital Media at Simon Fraser University (Canada)
  • Subject specific!
  • Contact at Faculty IV: Wolfgang Brandenburg, Quick Access 147520
Study Abroad Programs

• Dual Degree Programs with Faculty IV – Quick Access 150631
  • i.a. Groupes des Ecoles Centrales in Lille, Lyon, Marseille, Nantes, Paris (France), Warsaw University of Technology (Poland), KAIST (Korea), Shanghai Jiao Tong University (China)
  • Subject specific!
  • Contact at Faculty IV: Wolfgang Brandenburg, Quick Access 147520

• Information sessions at INT SB – Quick Access 134528
• Information sessions at Faculty IV – Quick Access 147526
  • Next date 24th of April 2017
Study Abroad Programs

Exchange Programs Faculty IV: Europa (Erasmus+)

Subject specific!
Computer Science-Related Chairs (Fachgebiete)

- Sahin Albayrak, Distributed Artificial Intelligence Lab
- Marc Alexa, Computer Graphics
- Benjamin Blankertz, Neurotechnology
- Oliver Brock, Robotics and Biology Laboratory
- Giuseppe Caire, Theoretical Foundations of Communication Technology
- Anja Feldmann, Internet Network Architectures
- Sabine Glesner, Software Engineering for Embedded Systems
- Manfred Hauswirth, Distributed Open Systems (also Fraunhofer)
- Hans-Ulrich Heiß / Reinhardt Karnapke, Communication and Operating Systems
- Olaf Hellwich, Computer Vision and Remote Sensing
Computer Science-Related Chairs (Fachgebiete)

- Ben Juurlink, Embedded Systems Architecture
- Odej Kao, Complex and Distributed IT-Systems; tubIT
- Stephan Kreutzer, Logic and Semantics
- Axel Küpper, Service-centric Networking
- Thomas Magedanz, Next Generation Networks
- Volker Markl, Database Systems and Information Management
- Sebastian Möller, Quality and Usability Lab
- Klaus-Robert Müller, Machine Learning / Intelligent Data Analysis
- Uwe Nestmann, Models and Theory of Distributed Systems
- Rolf Niedermeier, Algorithmics und Computational Complexity
- Klaus Obermayer, Neural Information Processing
Computer Science-Related Chairs (Fachgebiete)

• Manfred Opper, Methods of Artificial Intelligence
• Jörg Raisch, Control Systems
• Rafael Schaefer, Information Theory and its Applications
• Ina Schieferdecker, Quality Engineering of Open Distributed Systems
• Jean-Pierre Seifert, Security in Telecommunication
• Martin Skutella (Fak. II), Combinatorial Optimization and Graph Algorithms
• Henning Sprekeler, Modeling of Cognitive Systems
• Stefan Tai, Information Systems Engineering
• Toby Walsh, Algorithmic Decision Theory
• Thomas Wiegand, Image Communication
• Adam Wolisz, Telecommunication Networks
Final Remarks

• Make sure your TU Email reaches you; check it regularly!
• There is a lot of freedom and little obligations in doing a CS Master at TU Berlin: Get organized and make your choice!
• Getting a closer look (entry points are the web pages) at some chairs for getting a feeling in which direction you want to specialize; it may also help to attend research seminars of the respective groups.
• Doing a Master also means to get close to current research!
• Don't forget: You also need to successfully attend a seminar and a project for getting the master.

Enjoy studying in a scientifically rich and colorful environment!