Welcome to the Department of Computer Science at the University of Freiburg!

October 10th, 2017
Martina Nopper
Academic Advisor for Computer Science
# The Departmental Academic Advising for Computer Science

<table>
<thead>
<tr>
<th>Contact…</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who</strong></td>
<td><strong>Martina Nopper (Dipl.Inf.)</strong> Graduated from C.S. here in Freiburg in 2006</td>
</tr>
<tr>
<td><strong>How</strong></td>
<td><strong>Mail:</strong> <a href="mailto:studienberatung@informatik.uni-freiburg.de">studienberatung@informatik.uni-freiburg.de</a>&lt;br&gt;<strong>Phone:</strong> +49 761 203 8169&lt;br&gt;<strong>Web:</strong> <a href="http://www.informatik.uni-freiburg.de/studium_neu/studienberatung">http://www.informatik.uni-freiburg.de/studium_neu/studienberatung</a> If one does not work: try the other…</td>
</tr>
<tr>
<td><strong>When</strong></td>
<td><strong>Consultation hours:</strong> Monday + Wednesday 2 p.m. – 4 p.m.&lt;br&gt;Tuesday + Thursday 10 a.m. – 12 noon&lt;br&gt;&lt;em&gt;For questions likely to take longer: Please make an appointment via email&lt;/em&gt; If I am out of office during consulting hours, I will try to give notice via the website</td>
</tr>
<tr>
<td><strong>Where</strong></td>
<td><strong>Building 101 02 013a</strong> Same room as Ms. Ursula Epe</td>
</tr>
</tbody>
</table>
What am I doing here?

I would like to show you…

- where you are
- how to organize your study / build your own study plan
- administrative stuff
- how to proceed if you failed an exam
- where you get information and help
The Faculty of Engineering

- Or “TF” for short (from the German name “Technische Fakultät”)
- Founded in 1995
- 3 Departments:
  - Computer Science
  - Microsystems Engineering
  - Sustainables Systems Engineering
- 53 professors & group leaders (and still some more to come), more than 450 employees, about 1800 students
- Facilities: computer pools, WiFi, robotics labs, tele-teaching facilities, engineering library…
Department of Computer Science

- 19 professors & group leaders
- Research groups:
  - Algorithms and Data Structures
  - Computer Architecture and Operating Systems
  - Programming Languages and Software Techniques
  - Artificial Intelligence and Robotics
  - Graphics and Image Processing
  - Communication and Information Systems
  - Gender Studies in MINT
  - Embedded and Cyber Physical Systems
Master’s programmes:

- Master’s Programme Computer Science / Informatik
- Master’s Programme Embedded Systems Engineering (ESE) (offered together with the Department of Microsystems Engineering)
Time periods in University year

Lecture time summer semester

Exam period summer semester

Exam period winter semester

You are here

Lecture time winter semester
# Course types in Computer Science

<table>
<thead>
<tr>
<th>Course type (English)</th>
<th>Kursart (German)</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture and exercise / tutorial</td>
<td>Vorlesung und Übung</td>
<td>Presentation with questions / discussions from a lecturer/professor; tutorials provide (practical) exercises</td>
</tr>
<tr>
<td>Seminar</td>
<td>Seminar</td>
<td>Mostly theoretical research; summarizing and presenting (writing paper)</td>
</tr>
<tr>
<td>Lab course</td>
<td>Praktikum</td>
<td>Practical course with structured assignments (sometimes in special lab rooms), sometimes in groups</td>
</tr>
<tr>
<td>(Master) Project (≠ Master Thesis !)</td>
<td>(Master-)Projekt</td>
<td>Individual project with practical and theoretical parts, written portion and final presentation (used as preparation for Master’s Thesis)</td>
</tr>
</tbody>
</table>
Important notes on course types

- **Lectures** and **exercises** belong together even though they are mentioned separately in the course catalogue → you have to register for both!

- **Seminars** can be held weekly or as a compact course („Blockseminar“ → sometimes no time given in course catalogue or only for first meeting)

- **Seminars** and **Lab courses** vary from semester to semester, as most lecturers like to keep up-to-date with their research areas
## What's in the word „course“?

<table>
<thead>
<tr>
<th>English name</th>
<th>German name</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key course</td>
<td>Kurs-vorlesung</td>
<td>6 specific lectures + tutorials offered annually 3 in winter term, 3 in summer term</td>
</tr>
<tr>
<td>Specialization course</td>
<td>Spezial-vorlesung</td>
<td>Lots of different lectures + tutorials on various topics, mostly sorted into 3 big categories depending on the research topics (matching the 3 specialization areas)</td>
</tr>
<tr>
<td>Application course</td>
<td>Fachfremdes Wahlmodul</td>
<td>Courses of all kinds in some subjects different than Computer Science (sometimes referred to as Nebenfach or Elective, meaning minor subject)</td>
</tr>
</tbody>
</table>

Note: „Study course“ (=Studiengang) is mostly called *study programme*
# Key courses

<table>
<thead>
<tr>
<th>Key course</th>
<th>Semester</th>
<th>Related specialization area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algorithm Theory / Algorithmentheorie</td>
<td>Winter</td>
<td>Information Systems</td>
</tr>
<tr>
<td>Databases and Information Systems / Datenbanken und Informationssysteme</td>
<td>Winter</td>
<td>Information Systems</td>
</tr>
<tr>
<td>Software Engineering / Softwaretechnik</td>
<td>Summer</td>
<td>Cyber-Physical Systems</td>
</tr>
<tr>
<td>Computer Architecture / Rechnerarchitektur</td>
<td>Summer</td>
<td>Cyber-Physical Systems</td>
</tr>
<tr>
<td>Foundations of Artificial Intelligence / Grundlagen der Künstlichen Intelligenz</td>
<td>Summer</td>
<td>Cognitive Technical Systems</td>
</tr>
</tbody>
</table>
### Study plan – what kind and how many courses

<table>
<thead>
<tr>
<th>Number</th>
<th>Course Type</th>
<th>Area</th>
<th>ECTS</th>
<th>Category in HISinOne</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Key courses</td>
<td>Any area</td>
<td>6 each</td>
<td>Mandatory modules → core field (also called „core area in Comp. Sc.“)</td>
</tr>
<tr>
<td>1 or 2</td>
<td>Specialization courses</td>
<td>Any area</td>
<td>6 each</td>
<td>Mandatory modules → deepening (also called „Advanced Comp. Sc.“)</td>
</tr>
<tr>
<td>2 or 1</td>
<td>Specialization courses</td>
<td>Specialization area</td>
<td>6 each</td>
<td>Elective modules → spezialisation</td>
</tr>
<tr>
<td>4</td>
<td>Seminar</td>
<td>Specialization area</td>
<td>4</td>
<td>Elective modules → spezialisation</td>
</tr>
<tr>
<td>1</td>
<td>Seminar</td>
<td>Any area</td>
<td>4</td>
<td>Elective modules → spezialisation</td>
</tr>
<tr>
<td>1</td>
<td>Lab course</td>
<td>Any area</td>
<td>6</td>
<td>Mandatory modules → laboratory</td>
</tr>
<tr>
<td>1</td>
<td>Master project (≠ Master thesis!)</td>
<td>Any area</td>
<td>16</td>
<td>Mandatory modules → master project</td>
</tr>
<tr>
<td>x</td>
<td>Application courses (number depends on chosen subject 18 ECTS in total)</td>
<td>18</td>
<td>Elective modules → application area</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Master Thesis</td>
<td></td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

3 courses in total

2 seminars in total

10.10.2017
Intro Computer Science
Study plan – graphic representation

1 or 2 key courses (Core field / area)
2 or 1 specialization courses (Deepening / Advanced C.S.)

3 courses in total
1 seminar

1 lab course
1 master project

any area (in mandatory modules in HISinOne)

4 specialization courses

1 seminar

specialization area (in elective modules → specialization in HISinOne)

Application area (in elective modules → application area in HISinOne)

Master Thesis
Language of instruction

- **Key courses:**
  Databases is always in German.
  Algorithm Theory is always in English.
  The remaining courses are in English every other year:
  - **Winter semester 2017/18:**
    “Databases and Information Systems” in German, “Algorithm Theory” and “Image Processing and Computer Graphics” in English
  - **Summer semester 2018:** “Computer Architecture” in German, “Foundations of Artificial Intelligence” and “Software Engineering” in English

- **Specialization courses** generally in English

- **Seminars, lab courses, projects:**
  Language might be negotiated (but no legal claims!)
Specialization area: Cognitive Technical Systems

E.g. robotics and autonomous intelligent systems, artificial intelligence and machine learning, computer vision and graphics

Path finding and planing by robots

Simulation of flowing water

What a Quadcopter sees…

Motion tracking
Specialization area: Cyber-Physical Systems

E.g. verification and analysis of hard- and software systems, software development and programming languages, embedded systems.
Specialization area: Information Systems

E.g. theoretical and applied algorithms, networks and distributed systems, data management and communication, bioinformatics


Route planning using public transport

Testing environment for distributed networks

Image sources: Uni Freiburg / wikipedia
### Specialization areas in Computer Science

- Recommended „initial courses“ for the 3 specialization areas:

<table>
<thead>
<tr>
<th>Specialization Area</th>
<th>Winter term</th>
<th>Summer term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Technical Systems</td>
<td>Computer Vision</td>
<td>Introduction to Mobile Robotics</td>
</tr>
<tr>
<td>Cyber-Physical Systems</td>
<td>CPS – Discrete Models</td>
<td>CPS – Hybrid Models</td>
</tr>
<tr>
<td>Information Systems</td>
<td>Information Retrieval</td>
<td>Distributed Systems</td>
</tr>
</tbody>
</table>
Application areas

- Archeology (German only)
- Bioinformatics (in English, no previous knowledge required)
- Cognitive Sciences (mostly in German, few English courses available)
- **Economics** (mostly in English, usually no previous knowledge required)
- Environmental Natural Sciences (German only)
- Mathematics (German only)
- Medicine (German only)
- Microsystems Engineering (in English, no previous knowledge required)
- Neuroscience (in English, no previous knowledge required)
- Physics (German only)
- Political science (German only)
- Psychology (German only, just 3 students per year)

In the application area, at least **18 ECTS** have to be completed.

More information can be found here: [http://www.tf.uni-freiburg.de/studies/degree_programmes/master/curriculum.html](http://www.tf.uni-freiburg.de/studies/degree_programmes/master/curriculum.html)
Application areas in English

Bioinformatics:

- Bioinformatics I (6 ECTS)  
  (for example in WS1718)
- Bioinformatics II (6 ECTS)  
  (for example in SS18)
- Specialization course in Bioinformatics (6 ECTS)  
  (various courses offered each semester)
Application areas in English

**Economics:**

**English courses (more available in German only):**

- Computational Economics (6 ECTS, WS)
- Business Analytics (4 ECTS, WS)
- Electronic Markets (6 ECTS, SS)
- Futures and Options (6 ECTS, SS)
- Computational Finance (6 ECTS, WS)
- Principles of Finance (6 ECTS, SS)
- Advanced Financial Modelling (6 ECTS, WS)
- Seminars at Chair for Information Systems Research (mostly 4 ECTS, some with 6 ECTS)

- **Beforehand:**
  - Registration with study advisor Martina Nopper necessary!
Microsystems Engineering: *(curriculum recommended – deviations possible)*

- MST (microsystem technology) Technologies and Processes (5 ECTS)
- Assembly and Packaging Technologies (5 ECTS)
- Signal Processing (5 ECTS)
- 1 course from the concentration area (3 ECTS)
Application areas in English

Neuroscience:

- Computational Neuroscience (18 ECTS overall)
  - Lecture „Foundations in Neuroscience / From Membranes to Brain” (WS, weekly)
  - Lecture + exercise “Computational Neuroscience”, (SS, weekly)
  - Practical exercise “Simulation of Biological Neuronal Networks” (SS, compact course)
  - Seminar „Current Research Topics in Systems Neuroscience “ (SS or WS, compact courses)

Please note:
As it’s not possible to participate in weekly courses in Computer Science at the same time as the Practical exercise and the Seminar, we recommend to do those at the same time as the master project.
General Rules and Recommendations

- As soon as possible:
  Read the official exam regulations!
  (= terms and conditions of your study program)
- Most courses are offered every other semester. For details, please have a look at the module handbook 
  (http://www.tf.uni-freiburg.de/studium/modulhandbuecher/modulhandbuch-mscinfo2012 or via HISinOne)
- Order of courses does usually not matter
  - Nevertheless, check with lecturers for appropriate combinations or order of courses
- Be aware that you might need to change your original study plan
- It is recommended that the Master’s Thesis fits your specialization area
Conditional admission

- The required modules have to be completed by the end of the second semester.
- You will be **automatically** registered for these **courses**, but you have to **register** for the **exam yourselves**! (→ Registration for these exams have to be done via PDF form: [https://www.tf.uni-freiburg.de/studium/pruefungen/formulare/allgemein_anmeldung.pdf](https://www.tf.uni-freiburg.de/studium/pruefungen/formulare/allgemein_anmeldung.pdf))
- It is not sufficient to take the exam, you have to attend the course.
- If the lecturer requires any exercises for admission to the final exam, you also have to fulfill these requirements.
- Exams required for conditional admission can only be **repeated once**.
Courses for Conditional Admissions

- Students with a conditional admission have to complete additional courses from the Bachelor’s programme. Possible courses are:
  - Computer Science Theory – Bridging Course (online lecture + tutorial, every term) *in English*
  - Informatik III: Theoretische Informatik (lecture + exercise, 8 ECTS, winter term) *in German*
  - Datenbanken und Informationssysteme (lecture + exercise, 6 ECTS, winter term) *in German*
  - Graphentheorie (lecture + exercise, 3 ECTS, winter term) *in German*
  - Optimierung (lecture + exercise, 3 ECTS, summer term) *in German*
  - Forgeschrittene Programmierung (lecture + exercise, 4 ECTS, summer term) *in German*
  - Softwaretechnik / Software Engineering (lecture + exercise, 6 ECTS, summer term) *in English*
  - Algorithmen und Datenstrukturen für ESE-Studierende (lecture + exercise, 4 ECTS, winter term) *in German, but English recordings available*
Some words on intellectual honesty

- Intellectual honesty is important: You don‘t want someone (your co-workers?) to steal your work, so do not do it yourself!
- Do not falsify any results, either.
- Some well-known persons in Germany have fallen prey to plagiarism during the last years → Correct quoting is crucial!
- Severe consequences if you get caught
Tips for your first week

- Study the online course catalogue
- Check out as many courses as possible
- Most prerequisites stated in the course catalogue are recommendations, they are not mandatory
- Please note: The first exercise/tutorial always takes place *after* the first lecture!
- Register (via HISinOne) for the courses you want to take as soon as possible
- You can cancel again any courses *till the end of the lecture period!*
- For **Seminars** there is a special registration period: October 16th – 25th (*booking with preferences*)
- Information on dates for course registration: [http://www.tf.uni-freiburg.de/studies/calendar/dates.html](http://www.tf.uni-freiburg.de/studies/calendar/dates.html)
Registering for/ booking of courses

- Have a look at the course catalogue: https://campus.uni-freiburg.de
  → Studies offered
  → Show university course catalog
  → Technische Fakultät
  → Master of Science (M.Sc.)
  → Informatik, PO 2011

- For information on handling the Campus-Management-System see http://www.tf.uni-freiburg.de/studies/online-systems/course_booking/belegung.html or use the extensive wiki of HISinOne → Help → Guide for students

- If you have questions or made a mistake while registering: Contact us!
  (me or Ms. Gruenwald in the Dean‘s office: gruenwal@tf.uni-freiburg.de)
What to do if you forgot to register/book a course

- If you forgot to register for a course (or decide very late you would like to try it):
  - Go to the lecturer and ask if there are still places available and if it generally makes sense to start late
  - You can register yourself till the end of the lecture time, but the lecturer might also add you manually in the HISinOne system
  - The examination office can’t help you here!

- Registration for an exam in HISinOne is only possible if you are registered for the course!
Registration for exams

- It’s a second, independent step from the booking of the course. It’s **not** done automatically!
- The procedure is similar to booking the courses. For a how-to, see [http://www.tf.uni-freiburg.de/studies/online-systems/registration_instruction/anleitung-anmeldungHISinOne](http://www.tf.uni-freiburg.de/studies/online-systems/registration_instruction/anleitung-anmeldungHISinOne)
- Deadlines for the registration (and de-registration) for exams: [http://www.tf.uni-freiburg.de/studies/calendar/dates.html](http://www.tf.uni-freiburg.de/studies/calendar/dates.html)
- Without registering for an exam you are not allowed to take it, so **do not forget!**
- To make sure you are correctly registered, we recommend saving/printing the pdf of the in HISinOne → My studies → My course enrollments and exam registrations
How to proceed if you failed an exam

- Number of tries are limited:
  - Every exam can be tried 2 times
  - Three exams for lectures in the core area, advanced computer science or your specialization area can be tried 3 times

- You are registered automatically for the repetition(s) and cannot sign off

- For the „3rd tries“ you have to take the course completely once again

- You cannot substitute a course you wrote an exam in with another one.
More information about all this…

- … will be given by team from the examination office in the subsequent meeting „Introduction to exam regulations for Computer Science“:
  - 12:30 – 1:30 p.m.
  - Building 101 lecture hall 00 036 (here)
What to do in case of illness…

- If you are ill on the exam day,
  1. You should not take the exam! (You can’t „take it back“ once you did it…)
  2. Print the Medical certificate for Master students ([http://www.tf.uni-freiburg.de/studies/exams/forms](http://www.tf.uni-freiburg.de/studies/exams/forms))
  3. Go to a general practitioner on the day of the exam and ask him to fill the medical certificate
  4. Submit the filled medical certificate within three work days to the examination office

- If you are not sure what to do: Ask us!
Where can I find …

- Faculty of Engineering: [http://www.tf.uni-freiburg.de/studies](http://www.tf.uni-freiburg.de/studies)
- Calendar, dates and deadlines: [http://www.tf.uni-freiburg.de/studies/calendar/dates.html](http://www.tf.uni-freiburg.de/studies/calendar/dates.html)
- Information about exams etc.: [http://www.tf.uni-freiburg.de/studies/exams](http://www.tf.uni-freiburg.de/studies/exams)
- Study plans: [http://www.tf.uni-freiburg.de/studies/degree_programmes/master/curriculum.html](http://www.tf.uni-freiburg.de/studies/degree_programmes/master/curriculum.html)
- Academic rules (German version, i.e. the legally binding one): [https://www.tf.uni-freiburg.de/studium/pruefungsordnungen](https://www.tf.uni-freiburg.de/studium/pruefungsordnungen)
- For an English version (only as additional service) see [http://www.tf.uni-freiburg.de/studium/studieninteressierte/bewerbung/acs%20cs](http://www.tf.uni-freiburg.de/studium/studieninteressierte/bewerbung/acs%20cs)
Where to get software you might need for your courses?

- The Computing Center (*Rechenzentrum*) offers lots of software and licenses like MATLAB, Mathematica or LabView: [https://www.rz.uni-freiburg.de/services-en/beschaffung-em/software-en](https://www.rz.uni-freiburg.de/services-en/beschaffung-em/software-en)

- For questions you may contact [lizenzen@rz.uni-freiburg.de](mailto:lizenzen@rz.uni-freiburg.de)
## Persons offering help and information

<table>
<thead>
<tr>
<th>Function</th>
<th>Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programme Coordinator</td>
<td>Ms. Ursula Epe</td>
</tr>
<tr>
<td>Study / Academic Advisor</td>
<td>Ms. Martina Nopper</td>
</tr>
<tr>
<td>Examination Office</td>
<td>Ms. Susanne Stork</td>
</tr>
<tr>
<td></td>
<td>Ms. Annika Hartwig</td>
</tr>
<tr>
<td>Dean of Studies (Computer Science)</td>
<td>Prof. Hannah Bast</td>
</tr>
<tr>
<td>Librarians</td>
<td>Ms. Susanne Hauser</td>
</tr>
</tbody>
</table>
Do you have any questions now?