Master Computer Science

Introduction

Florian Frohn — Academic Advisor
Overview

Outline

Overview

Electives

Seminar and Lab

Focus Colloquium

Course on Scientific Integrity

Thesis

Application Area

Requirements

Voluntary Additional Courses

Choosing Electives

Staying Abroad

Further Information
## Overview

### Goals of the Master Program

<table>
<thead>
<tr>
<th>Broad Education</th>
<th>Deep Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>✨ you have to choose modules from multiple areas</td>
<td>• we encourage specialization</td>
</tr>
<tr>
<td></td>
<td>• focus colloquium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independence</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>• You are responsible for your studies!</td>
<td>• for leadership positions</td>
</tr>
<tr>
<td>• no fixed study plan</td>
<td>• for PhD</td>
</tr>
<tr>
<td>• no mandatory courses</td>
<td></td>
</tr>
</tbody>
</table>
Overview

Structure of the Master Program

- Electives: 58 – 66 CP
- Seminar: 4 CP
- Lab: 7 CP
- Focus Colloquium: 3 CP
- Application Area: 10 – 18 CP
- Thesis: 30 CP
- Course on Scientific Integrity: 0 CP
- Requirements: 0 – 42 CP
- Voluntary Additional Courses: 0 – \(\infty\) CP

\[ \sum \geq 120 \text{ CP} + \text{Requirements} \]

\( > 120 \text{ CP} \)

all courses count fully, or not at all
Electives

Outline

Overview

Electives

Seminar and Lab

Focus Colloquium

Course on Scientific Integrity

Thesis

Application Area

Requirements

Voluntary Additional Courses

Choosing Electives

Staying Abroad

Further Information
### Electives

### Areas

<table>
<thead>
<tr>
<th>Theoretical CS</th>
<th>Visual Computing &amp; Interaction</th>
<th>AI &amp; Data</th>
<th>Software Methods &amp; Tools</th>
<th>Hardware/Software Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥12 CP</td>
<td></td>
<td>two times ≥12 CP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algorithms</td>
<td>Computer Graphics</td>
<td>Language Processing</td>
<td>Project Management</td>
<td>IT-Security</td>
</tr>
<tr>
<td>Logic</td>
<td>VR</td>
<td>Data Science</td>
<td>Quality Assurance</td>
<td>Embedded Systems</td>
</tr>
<tr>
<td>Verification</td>
<td>Computer Vision</td>
<td>Machine Learning</td>
<td>HPC</td>
<td>Internet Technology</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

*only* electives count for the limits above
Electives

General Information

Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>typically 3h/week</td>
</tr>
<tr>
<td>Exercise</td>
<td>typically 1-2h/week</td>
</tr>
<tr>
<td>Exam</td>
<td>at end of semester</td>
</tr>
</tbody>
</table>

Admission for Exams

- teachers fix admission criteria
  - achieve minimum score in exercises
  - midterm exam
  - ...
- admission valid for only one year

Registration

- via RWTH Online
  - you automatically get access to RWTHmoodle, mailing list, ...
- no unified registration period
- separate registration for exam!

Always go to the first lecture!
Electives

RWTH Online

Campus Management System

- overview of courses for...
  - the current semester
  - the whole master program
- registration for most modules & exams
- overview of grades
- calendar with your courses
- ...

URLs

- RWTH Online: https://online.rwth-aachen.de
- Manuals: https://wiki-intern.rwth-aachen.de/display/RD/FAQ+for+Students
Electives

Registration – Live Demo

RWTH Online – Test System
## Electives

### Exams

**General Information**
- written or oral
- 2 exams at end of semester
  - might differ in application area
- you cannot repeat passed exams
- after 3 failures: choose different elective

**Registration**
- separate registration for each exam
- standard registration periods
  - 1st exam: 1.10. – 15.12.
  - 2nd exam: until 7 days before the exam
  - Teachers may modify these dates!
- registration for 2nd exam after results of 1st exam were published

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**Deregistration** — [https://www.rwth-aachen.de/go/id/eir/lidx/1](https://www.rwth-aachen.de/go/id/eir/lidx/1)

Until 3 working days before. If you are ill...
- doctor’s certificate issued on or before the day of the exam
- must indicate that you cannot take exams on that day
  - No “not fit for work” certificates!
- must be at ZPA on the 3rd working day after the exam
Electives

Central Examination Office
Zentrales Prüfungsamt (ZPA)

What they do

- examination administration
- recording of grades
- exam registrations
- exam deregistrations / withdrawal
- admission check for thesis
- issues various certificates
- ...
Electives

Registration – Live Demo

RWTH Online – Test System
Seminar and Lab

Outline
Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
Seminar and Lab

What it is about

offered by all CS-chairs, various topics

Seminar

- independent work (with supervision)
  ↘ no collaboration with other students
- topic from the literature
- written report & presentation

- usually as “Blockseminar”
  ↘ all talks within a few days after lecture period
- (rare) alternative: weekly meetings

Lab

- collaborate in small groups
- usually software projects

- details differ, depending on the organizer
  ↳ No industry internships!
## Seminar and Lab

### Organizational Matters

#### General Information

- Starts with kickoff-meeting
- Seminar / lab passed ➔ you cannot take another one
- Withdrawal possible until 3 weeks after distribution of topics
- 3 fails ➔ end of studies!

#### Registration – [https://supra.informatik.rwth-aachen.de/](https://supra.informatik.rwth-aachen.de/)

- Central distribution system
- Registration in June/July for winter term, December/January for summer term
- Further information in kickoff-meeting
Focus Colloquium

Outline

Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
## Focus Colloquium

### What it is about

- oral exam
- 3 courses
- topics must be connected
  - electives you’ve done ✓
  - electives you’ve done during your bachelor ✓
  - electives you haven’t done ✓
  - seminar ✓
  - lab ✓
  - courses from different professors ✓
  - courses from different research groups ✓
  - mandatory bachelor courses ✗

### Why it is important

- “just” 3 CP
- Counts **four-fold** for your final grade!

### Finding & Registering a Topic

- Start planning **now**!
- Have a **plan B**!
- contact professors – they must approve your choice of modules
- Schedule in time!
- registration by examiners
Course on Scientific Integrity

Outline

Overview
Electives
Seminar and Lab
Focus Colloquium

Course on Scientific Integrity
Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
Course on Scientific Integrity

https://www.rwth-aachen.de/go/id/mylsw/lidx/1/

- online course
- provided via Moodle
- exam
  - online
  - twice per semester
- mandatory for all master (and PhD) students
- required for registering your thesis
Thesis

Outline

Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity

Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
Thesis

General Information

- thesis: 27 CP
- presentation: 3 CP
- two reviewers
  - grade: average
- 6 months

Prerequisites

- ≥ 60 CP
- requirements
- course on scientific integrity

What if I fail?

- can be repeated once
  - You must register for a new thesis within 3 semesters!

Registration – pa.informatik.rwth-aachen.de/application/register-thesis

- online, via request to the examination board
- examination board informs you about deadline
# Thesis

## Finding a Topic

### Where?

- CS professors only
- \(\not\) no topics from industry
- \(\not\) no topics from other departments
  - even if they advertise them...
  - rare exception: cross assignments
- typically within your “specialization”

### When?

- may take time
- may require training period
  
  \(\bowtie\) start planning several months ahead

### How?

- check websites
- get in touch
- get connected
  - supervisor from seminar
  - supervisor from lab
  - become a student assistant

### Pitfalls

- popular specialization \(\sim\) hard to find topics
- professors / scientific staff may leave
- Think about your specialization(s) **now**!
- Have a **plan B**!
  - last resort: request “support for finding a thesis” at examination board
Paperless – the Examination Board’s Online System

Paperless
Application Area

Outline

Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis

Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
Application Area

How it works

Choose non-CS modules from large catalog, including...

- Business Administration
- Electrical Engineering
- Mathematics
- Philosophy
- Mechanical Sciences
- Medical Sciences
- Physics
- Biology
- Chemistry
- Psychology
- ...

new in WS 23/24: no need to decide for one of the areas above
Requirements

Outline
Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area

Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
## Requirements

**What they are**

- Bachelor modules
- have to be done in addition to your master studies
  - no influence on standard period of study

**Practical Information**

- listed in admission letter
- registration via RWTH Online
  - exception: “elective course from Theoretical Computer Science”
  - register at ZPA
- no grades
- required for registering your thesis
Voluntary Additional Courses

Outline

Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area
Requirements

Voluntary Additional Courses

Choosing Electives
Staying Abroad
Further Information
### Voluntary Additional Courses

#### What can I choose?

arbitrary RWTH courses – if the examiners allow it

#### How does it count?

- grades on final certificate
- no impact on overall grade

#### Registration

- ideally RWTH Online
- otherwise: get in touch with examiners
- **have to be declared at ZPA**
  - until 1 week after you get your last grade
Choosing Electives

Outline
Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad
Further Information
Choosing Electives

- video introductions to electives
  https://sc.informatik.rwth-aachen.de/de/wahlpflicht/
- RWTH Online
- group websites
  http://www.informatik.rwth-aachen.de/
- unofficial info page
  https://rwthoffline.de/
- Go to lectures at beginning of semester!
Outline

Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives

Staying Abroad

Further Information
## Staying Abroad

### Where?
Partner universities!

### When?
- anytime
- 4 semesters pass by quickly
  - Start planning now!

### How?
- learn teaching language
  - RWTH language center
- no extension of study duration – with good planning
  - transfer of credits
  - leave of absence
- dedicated academic advisor – student-exchange@cs.rwth-aachen.de

https://www.comsys.rwth-aachen.de/teaching/outgoings/
Further Information

Outline

Overview
Electives
Seminar and Lab
Focus Colloquium
Course on Scientific Integrity
Thesis
Application Area
Requirements
Voluntary Additional Courses
Choosing Electives
Staying Abroad

Further Information
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- **mentor program**
  - registration via RWTH Online

- **Center of Studies – Computer Science**

- **mailing list**
  - msinf@lists.rwth-aachen.de
  - you’re subscribed automatically

- **Student Advice Center**
  - for questions that are not specific to your course of studies
  - workshops, talks, ...

- **Allgemeiner Studierendenausschuss**
  - university-wide student organization

- **Fachschaft**
  - student organization of the departments CS, Mathematics, and Physics

- **Computer Science Library**

- **Main Library**
Thank you for your attention

Any questions?