Introduction

Master Software Systems Engineering

Winter semester 2020/21

Dirk Thißen

Academic Advisor: N.N.
Master Programme Coordination

- **Head:** Prof. Gerhard Lakemeyer, Ph.D.
  - Office hours: Thursday, 13h – 14h

- **Advisor:** N.N.
  - Office hours: by appointment(!)
  - E-Mail: sse@kbsg.rwth-aachen.de

- **Website:** [http://dbis.rwth-aachen.de/SSE](http://dbis.rwth-aachen.de/SSE)

- **Mailing list:** to be announced
Master Programme Software Systems Engineering

by www.SSE — last modified Sep 28, 2010 08:42 PM in Master Programme Software Systems Engineering at RWTH Aachen University

Entry page of the SSE homepage. Contains pointers to all relevant information.

Welcome to the web pages of the International Master Programme Software Systems Engineering offered by the Department of Computer Science at RWTH Aachen University.

This two year Master's programme is primarily intended for international students holding a Bachelor's degree in Computer Science or a closely related field from an internationally recognized university. There is a detailed list of special entrance requirements applicants need to comply with for admission. For more information on the programme and how to apply, please follow the links to the left.

The programme is completely taught in English. (You do NOT need German language proficiency.) For the language entry requirements see the central page Language Requirements for RWTH Master's programmes.

The programme only starts in winter, i.e. in October!

Deadline for international applicants always in March of the corresponding year.
Please also have a look at the SSE frequently answered question FAQ.

You might also be interested in general information about the Department of Computer Science at RWTH Aachen University and the CS Chairs and Institutes.

The Introductory Meeting 2019 will take place on October 4, 2019, 10:30h, at Informatik-Zentrum, lecture hall AH III. You can download the 2019 SSE Intro Meeting Slides.

The Master Programme Software Systems Engineering (SSE) is one of the International Master's Degree Programs at RWTH Aachen. There is General Information for Prospective International Students as well as Info on Deadlines for International Applicants for Master programmes and the likes. Once you get admission and you are enrolled you might want to check Normatitites to be Completed. If you are interested in taking part in an Erasmus exchange rather than entering a full programme, have a look at Information for (Erasmus) Exchange Students.

Note: currently not updated
First: what about Covid-19?

- All courses are taught online via Zoom
  - With exception maybe of a very few labs (not important for you)

- Some teachers give their lectures live and provide recordings afterwards
  - In few exceptions maybe no recording is done

- Other teachers only provide recordings of their lectures
  - And maybe offer a question hour in addition

- Examinations in February – April might be written or oral
  - Oral: usually online via Zoom
  - Written: planned in presence in lecture halls
    - Let us see how situation evolves; might be subject to change
    - If you are not able to join in presence – alternative examination forms possible (the teachers decide on these forms)
First: what about Covid-19 and You?

- Studying online is challenging
  - Force yourself to follow all your courses it time
    - Even if only recordings are provided, try to follow them weekly!
    - Otherwise, you easily can get lost in a course
    - Needs self-discipline
  - Try to connect to others
    - Hard because you should keep distance to others
    - Learning often is easier in groups
    - Working in groups helps for self-discipline
Master’s Goals & Overview
Goals of the Master Program

- In-depth education
  - Broad range of elective subjects, mostly research-oriented

- Greater independance
  - Seminar, Practical, Master’s thesis

- More responsibility for future job
  - Ideation and leadership qualities
  - Less implementation

- Qualification for PhD
Overview of Master Software Systems Engineering

- Comprises **120 ECTS credits** (credit points) in **4 semesters**
  - ECTS credits are reflecting a course’s workload
  - 30 ECTS credits are full workload for one semester

- Only few mandatory achievements
  - *No fixed study plan*
  - Nearly no mandatory courses, freedom of choice
    - With restrictions ;-)
  - Large responsibility for own studies!

- You are studying due to certain **Master examination rules**
  (“Master-Prüfungsordnung”, MPO)
  - Current structure of Master programme since winter term (WS) 2011/12
    - With some updates till then; current version available [here](#) (in German)
  - So you are “SSE with MPO2011”
Overview of Master Software Systems Engineering

- **Structure of study program:**

  - Courseswork: 72 Credits
    - 1 Seminar: 4 Credits
    - 1 Lab (Practical): 7 Credits
    - Depth oral colloquium (DOC): 3 Credits
    - German Language Course*: 4 Credits
    - Master’s thesis: 30 Credits
  
  **Total Credits:** 120 Credits

<table>
<thead>
<tr>
<th>Component</th>
<th>Credits</th>
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<tr>
<td>Courseswork</td>
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<td>German Language Course*</td>
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<tr>
<td>Master’s thesis</td>
<td>30</td>
</tr>
</tbody>
</table>

* or replacement

Software Systems-related: 86 Credits
Non-tech: 4 C.
Master’s thesis: 30 Credits
Restrictions on Coursework

- **Five fields in Software Systems Engineering:**
  
  - **Theoretical Foundations of SSE**
    - 12-35 Credits
  
  - **Communication**
    - 0-35 Credits
  
  - **Data- & Information Management**
    - 0-35 Credits
  
  - **Applied Computer Science**
    - 0-35 Credits
  
  - **Software Engineering**
    - 16-35 Credits

- Minimum of **12 credits** for electives in **theoretical foundations of SSE**
  - At least two courses (min 12 credits) from “Core Subjects”

- Minimum of **16 credits** for electives in **software engineering**
  - „Software Project Management (4 credits) mandatory, at least two more courses (min 12 credits) from “Core Subjects”

- Maximum of **35 credits** per field
  - Note: only coursework, not including seminar, lab and DOC

- [Website Link](https://online.rwth-aachen.de/RWTHonline/ee/ui/ca2/app/desktop/#/pl/ui/$ctx/wbstpcs.showSpoTree?$ctx=design=ca2;header=max;lang=en&pSJNr=1693&pStStudiumNr=&pStartSemester=&pStpStpNr=586)
Some more options / information

- **Coursework** is 72 credits
  - 68-72 credits by lectures in the five areas
    - Overview on lectures taught this semester: [https://www.graphics.rwth-aachen.de/media/resource_files/twominutemadness_ws_20.html](https://www.graphics.rwth-aachen.de/media/resource_files/twominutemadness_ws_20.html)
    - Might include 4 credits by a second, optional seminar

- **Seminar, lab and second, optional seminar** should not be all from same area!

- **Depth Oral Colloquium** ("Schwerpunktkolloquium")
  - Oral examination on three related courses (often from one area)
  - Ask examiner (professors) for possible combinations

- **German Language Course** can be replaced
  - Only for German-proficient students (proof needed!)
  - Replaceable with non-technical course (4 ECTS w/o grade)
For Your Orientation: The SSE Map
## Sample (!) Course of Study

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<th>Course</th>
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<td>Core Subject Theoretical Foundations</td>
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</tr>
<tr>
<td></td>
<td>Lecture from five areas</td>
<td>V3 Ü2</td>
</tr>
<tr>
<td></td>
<td>Lecture from five areas</td>
<td>V3 Ü1</td>
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<tr>
<td></td>
<td>German Language Course</td>
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<td></td>
<td>Software Project Management</td>
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<td>Lecture from five areas</td>
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<tr>
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<td>Lab</td>
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<tr>
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<td>4. Semester</td>
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<td>Master’s thesis</td>
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Total ECTS: 28 ECTS + 30 ECTS + 29 ECTS + 33 ECTS = 110 ECTS
Courses & Exams
Coursework

- One taught course usually comprises
  - Lecture
  - Exercise (practical and/or theoretical), maybe exercise groups
  - Usually V3 Ü2 oder V3 Ü1, 6 Credits (sometimes V2 Ü1, 4 Credits)
    - V3 = 3 hours of lecture per week // Ü2 = 2 hours of exercise per week

- Examined by final exam at the end of the semester
  - Two exams per year, usually both at end of the semester
    - In some exceptions: one exam per semester
  - Written (60 – 120 min.) or oral (15 – 45 min.), decided by teachers
  - Teachers can decide on exam admission criteria!
    - Hand in solutions which are corrected by teachers, achieve minimum score
    - Pass a presence exercise / midterm exam
    - ...
  - Note: exam admissions only valid for one year!
**RWTHonline & ZPA**

- **RWTHonline**: [https://online.rwth-aachen.de](https://online.rwth-aachen.de)
  - Campus management system of RWTH Aachen University
  - Overview on courses offered per semester
    - Detailed course descriptions usually also on the chair’s websites
  - Examination regulations
    - Overview about all courses (modules) assigned with a study program
  - Study management for students
    - Registration for courses & exams
    - Overview of study status & grades
    - ...
  - Manuals: [https://wiki-intern.rwth-aachen.de/display/RD/Manuals+for+Students](https://wiki-intern.rwth-aachen.de/display/RD/Manuals+for+Students)

- **ZPA**: Zentrales Prüfungsamt (Central Examination Office)
  - Administrative management of exams, administration of grades, issuing transcripts
Registering for Coursework (Lecture/Exercise)

- **Register for each lecture/exercise via RWTHonline**
  - Getting access to all learning material: slides, exercise sheets, lecture recordings, …
    - Mostly via RWTHmoodle learning rooms
  - Course dates are filled in into your internal calendar
  - You are put on the mailing list for the course
  - **Note**: no unified registration periods! Each teacher configures own ones. Check registration periods of interesting courses timely!

- **What if there is no registration??**
  - Maybe the teacher has not yet configured anything…
  - Or a teacher manages all material and e-mail lists on own web pages
  - **Always try to attend first lecture of a course to get such organizational information!**
Registering for Coursework

1. Open the course semester you would like to plan by clicking on the triangle that appears before each listed semester.

2. Select the module. Symbol: ♦

3. Select the offer node. Symbol: ▲

4. The semester is shown in the course title (a). If necessary, check the academic year is correct and change it using the arrow button (b).

5. Click on the green T symbol in the “Part” column: (c)
   If the symbol is red or gray, it is not possible to register for the course.
Registering for Coursework

1. You will see this registration form. It is always the same, whether you are using the Curriculum Support, My Calendar, or My Courses apps.

2. Review your entries.

3. If you are not sure whether you would like to take the course, you can add the course group to your favorites. Click on the star next to the group title and then BACK. Your bookmarked dates will now appear in your calendar, although you are not yet registered on the course.

4. If you would like to take the course, click on CONTINUE on the form.
Registering for Coursework

1. Select the SPO context. Only choose the “free registration” option if no SPO context is available. Places on courses with limited capacity will e.g. often be preferentially allocated to registrations with SPO context.

2. If you can choose from several groups, select your preferred group and specify your preference ranking.
Registering for Coursework

1. Click on ENTER PLACE REQUEST to complete your registration. This button appears once you have entered all the required details.

2. Follow the menu prompts until the system shows that you have submitted your request. Your request for a place will first be reviewed. Once you have been allocated a place you are registered on the course.
Registering for Coursework

1. Check your registration status under “My Courses” in the Courses app.

2. You can edit or cancel your request for a place here within the stated deadlines.

NOTE: registering for a course does not mean you are registered for the relevant exam(s). You must register for all your exams in an additional process.
Registering for Exams

- Registering for lectures/exercises only allows you to participate in a course

- **Additional registration for exam required!**
  - Separate registrations for first and second exam configured
    - Only possible to register for one date
    - In doubt, register for the first one

- **Registration period**
  - Standard for first exam: 1st October – 15 January
  - Standard for second exam: till 7 days before exam date
    - *Note! Differing periods this semester due to Corona!*
  - Important note:
    - Carefully check periods for each course! Teachers can modify them!
    - Listen for announcements for summer semester
  - Do not forget registration! Late registrations generally not possible!
Registering for Exams

1. Open the course semester you would like to plan by clicking on the triangle that appears before the listed semester.

2. Select the module. Symbol: ♦

3. Select the exam node. Symbol: •

4. The semester is shown in the exam title (a). If necessary, check the academic year is correct and change it using the arrow button (b).

5. Click on the green P symbol in the “Part” column (c). If the symbol is red or gray, it is not possible to register for the exam.
Registering for Exams

Semester recommendations will not always be given. In such cases, use “Curriculum” in Curriculum Support.

Example of registering for an exam:

1. Click on “Exam date” in the NODE FILTER drop down menu. (a)
   Registering for a course via the curriculum works in the same way. Use “NODE FILTER (all)” for this.

2. Open the exam nodes for the exam you would like to take and check the academic year

3. Click on the green P symbol to open the registration form. (b)
Registering for Exams

The “Subject exam/Module exam” window will open.

This happens whether you register via Curriculum Support, your Calendar, the Examination Dates, or the Exam Registration app.

Under “Exam dates and registration” select CONTINUE TO REGISTRATION.

Examination Information:
- Assessment Scheme: -
- Number of Exam Dates: -
- Note: -

Exam Statistics: see Statistical evaluation of exam results

Exam Dates and Registration:
- Examiner: Gehring, Florian
- Currently registered: 0 (max. 9999)
- Date and Time: 28.01.2020, 10:00 - 18:00
- Registration Period: 01.08.2019, 00:00 - 21.01.2020, 23:55
- Deregistration Until: 24.01.2020
- Organization: [162320] Molecular and Systemic Neurophysiology Teaching and Research Area
Registering for Exams

1. Check the exam details.
2. Make sure your programme details are correct.
3. Click on REGISTER and follow the menu prompts until the system confirms you are registered.

It is only possible to be preliminarily registered for some exams.

What does “preliminarily registered” mean?

In some subjects you are required to fulfill certain prerequisites before taking the exam. These are clearly laid out in the module catalog of your examination regulations.

When you submit a conditional registration, the prerequisites will be checked at a later time. If you have fulfilled the prerequisites up to 6 days before the exam date, the system will automatically register you for the exam. If you have not fulfilled them by this time, you will be de-registered.
Registering for Exams

- You can see an overview of your exam registrations via the Exam registration application in the "My Exams" tab.
- You can de-register here within the stated deadlines. To do so, click on Deregister in the Operations column. The "Subject exam/Module exam" window will open.

Exams you are registered for by 14.08.2019 15:29

<table>
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<tr>
<th>No.</th>
<th>Sem.</th>
<th>ID of Programme</th>
<th>Type</th>
<th>Title</th>
<th>Registration status</th>
<th>Examiner</th>
<th>Date</th>
<th>Place</th>
<th>Deregistration until</th>
<th>Operations</th>
</tr>
</thead>
</table>
(De-)Registering for Exams

- **Withdrawal of exam registration possible**
  - Usually until three working days before the exam date
  - *In times of Corona maybe till 5 minutes before the exam’s time*

- **Not taking an exam because of illness**
  - Doctor’s certificates must be issued on the day of the exam
  - Must be handed in at ZPA at latest on the third working day after the respective exam
  - ZPA withdraws your registration

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

- **Missing a registered exam without medical certificate**
  - Counts as fail
Deregistering from Exams

The following applies to all Bachelor’s and Master’s degree programmes:

A de-registration within the stated deadline (a) is not considered as a withdrawal by the system and will not appear in the printout of your study record.

If you would like to de-register from an exam, click on CONTINUE TO DEREGISTRATION (b) and follow the menu prompts until the system confirms you are de-registered.
Repeating Exams

- Participation in 2nd exam
  - If failing 1st exam, withdrawing registration or being ill
  - New registration required!
    - Possible only after results of 1st exam are published

- Remember: every exam has to be actively registered for!

- You can take each exam at most three times
  - Exam plus two repetitions
  - When failing three times, you cannot take that course any more
    - IF failing the course ends your studies, you can take an oral supplementary examination
      - You have to apply for it in time
Seminar & Practical

- **Seminar**: Independant elaboration of a topic from existing literature
  - Literature survey, writing a paper & giving a talk
  - Teachers offer seminars on various topics of their research directions
  - Typically 10 – 30 participants

- **Practical**: Solve practical tasks
  - No industry practicals!
  - Development, implementation, constructing prototypes, …
  - Teachers offer practicals on various topics
  - Typically 10 – 20 participants, teamwork

- **Both**: at most three tries possible
  - Failing three times ends your studies!
Participation in Seminars & Labs

- Distribution of places independent of RWTHonline
  - Central distribution system for all places in seminars and labs
  - Online registration in June/July for winter semester and in December/January for summer semester
    - Registration via: https://supra.informatik.rwth-aachen.de
  - After places‘ assignment, you might be asked to register for the assigned seminar/lab via RWTHonline, or the teacher registers you
    - Process announced in kickoff-meeting of that seminar/lab

- Withdrawal possible until three weeks after distribution of topics
  - Deregister in RWTHonline or announce withdrawal to teacher
    - Process announced in kickoff-meeting
Depth Oral Colloquium

- **Oral exam on coherent topics**
  - Courses with an amount of 12 – 18 Credits in total
    - At least three courses
    - Can be courses in which you already have done an exam

- **Assessment: 3 Credits**
  - Weight for final Master’s grade: 12 Credits (counted 4-fold)
    - … while all other modules are counted corresponding to their credits

- **Registration:**
  1. Discuss courses and examination date with examiner
  2. Personal registration in ZPA at least one week before the date
Master’s Thesis

- Typically last part of your studies
- Independent work on a topic with methods learnt during the course of studies
- Practical work, written thesis, talk
- Master’s thesis is handed out (exclusively) by a Computer Science professor (and his/her research assistants)
  - Industry-cooperation is possible in agreement with the supervising professor
- Thesis is evaluated by two reviewers (= professors)
- Thesis can be repeated once
Master’s Thesis

- Thesis corresponds to 30 credits (one full semester)
  - 27 credits for written thesis, 3 credits for oral defense
  - Usually done in final semester
  - Try to find a topic early – often you have an orientation phase
    - Browse websites of chairs which do research/teaching in the area of your interest
    - Contact PhD students who work on interesting topics and ask for thesis possibilities if nothing can be found on the websites

- Registration
  - You must have achieved at least 60 credits to register the thesis
  - Prerequisites (Auflagen) have to be fulfilled before registration
  - Topic is handed out by supervising professor (primary reviewer)
  - Personal registration in ZPA
    - You get handed out a form for registration
Which Courses should I take???
Which Courses should I take???

- Browse semester‘s course list

![Courses](image-url)
Which Courses should I take???

- Or use Curriculum Support to get an overview
### Which Courses should I take???

#### Curriculum

**Academic year 2018/19**

<table>
<thead>
<tr>
<th>Node-Name</th>
<th>Rec. Sem. (WS)</th>
<th>Credits</th>
<th>Duration</th>
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<tr>
<td>[2009] Informatik</td>
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<td>Wahlpflichtbereiche</td>
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<td>Masterarbeit</td>
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### Which Courses should I take???

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<td>+                Wahlpflichtbereiche</td>
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<td>+                Masterarbeit</td>
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### Which Courses should I take???

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Which Courses should I take???

- Or use semester plan

---

88 079 Computer Science (HG-NRW/2009, Master programme, current)

**Curriculum**

Academic year 2018/19

<table>
<thead>
<tr>
<th>Node-Name</th>
<th>Recommended Sem. (W)</th>
<th>Credits</th>
<th>Duration</th>
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Which Courses should I take??

Course timetable

MSc Software Systems Engineering: Intro 1st semester
Which Courses should I take???

- Or study research groups on Computer Science web pages
  - [http://www.informatik.rwth-aachen.de](http://www.informatik.rwth-aachen.de)
Chairs/Teaching and Research Areas

- **Overview:**
  - [https://www.informatik.rwth-aachen.de/cms/Informatik/Forschung/Forschungsbereiche/~mrys/Liste-der-Forschungsbereiche/?lidx=1](https://www.informatik.rwth-aachen.de/cms/Informatik/Forschung/Forschungsbereiche/~mrys/Liste-der-Forschungsbereiche/?lidx=1)

- **13 Chairs**
  - One “chair professor” each (head of department)
  - Maybe additional professors (teaching and research areas)

- **Details on chairs:**
  - Follow links on overview site
    - Switch language if necessary
  - Check “teaching” and “research” links
Which Courses should I take???

- Overall: get overview by
  - RWTHonline: https://online.rwth-aachen.de
  - Group websites: https://www.informatik.rwth-aachen.de/cms/Informatik/Forschung/Forschungsbereiche/~mrys/Liste-der-Forschungsbereiche/?lidx=1
  - Info page of one of our students: http://vsteiner.com/rwth/co/
  - Short videos as course presentations: https://www.graphics.rwth-aachen.de/media/resource_files/twominutemadness_ws_20.html

- At the beginning of the semester: Visit diverse courses to get an impression!
- And: academic advisor
Academic Advisor

- **Your Advisor**
  - Faculty members of the CS department
  - Assigned to each student by mid November
  - Can advise you regarding courses you should take
  - Will possibly supervise your thesis

- **Change of Advisors**
  - You may decide to change your advisor (at any time)
  - May depend on the specialization you choose
  - Your new advisor has to agree
  - Please notify sse@kbsg.rwth-aachen.de
  - There’s no deadline for a change
Other useful Information
Central Examination Office (ZPA)

- Registering for depth oral colloquium & master‘s thesis
- Maybe necessary to contact in case of trouble with study records
  - SuperC, Templergraben 57
  - Ms. Cuepper currently is your officer
Request Forms / Examination Board

- Request Forms for Applications to the Examination Board
  - Change Title of Master Thesis
  - Disregard Grade(s) in Final Grade Computation
  - Drop an Elective Course
  - Extend Deadline of Master Thesis (only for severe reasons!!)
  - Miscellaneous Application
  - General Question for your PA Contact Person

- Available at https://pa.informatik.rwth-aachen.de/
Prolongation of Residence Permit

- If you cannot finalize the programme in time, it is possible to prolongate your residence permit.

- Procedure:
  - Get your intermediate transcripts at the central examination office.
  - Get a certificate at the International Office and a “Studienverlaufsbescheinigung” by the study advisor or the examination board.
  - Take certificates to aliens department of local authorities.

- Further information:
Transfer of Credits (to “speed up” your studies)

- What can be transferred:
  - Credits from your Bachelor and Master programmes so far
  - Programmes should have taken at least four years!
  - Courses must be Master’s-level CS courses
  - May be similar to courses in the SSE programme
  - Will be filed according to SSE-Programme structure
  - Maximum: 30 credits
  - Grades of transferred courses have to be better than German 3,0

- Deadline: end of March 2021 (detailed instructions given later)

- We need:
  - Letter containing which courses you want to be transferred (incl. your name, e-mail, immatriculation #, prioritization)
  - Copy of the transcripts of your previous studies
  - (Official) description of grading scheme
Some things which came up during the talk

- **Auflagenfächer**
  - If you got some additional courses as „Auflage“ (prerequisite) for your studies in SSE, you need also to register for course and exam of this Auflage
  - If this is not possible via RWTHonline, please contact the teachers, explain about your situation and ask them to manually book you into the learning room and to manually register you for the exam

- **Staying abroad for one semester**
  - Please contact the study advisor for exchange students
  - Dirk Thissen, student-exchange@cs.rwth-aachen.de or thissen@comsys.rwth-aachen.de
Computer Science Institutions

- **Computer Science Library**

- **Address:**
  - Informatikzentrum, Ahornstr. 55
  - Rooms 4001-4007
  - Opening hours:
    - Mon – Thu 8:30-19:30
    - Fri 8:30-17:00

- **Contact:**
  - Phone: 80-21026
  - biblio@informatik.rwth-aachen.de
Computer Science Institutions

- **Services** of the library
  - Large amount of books and journals
  - Literature to current lectures
  - Seminars on literature surveys
  - Several student working rooms
  - Kinder & Wissenschaft (KiWi):
    - Student working room with toys and facilities for baby change
  - Outdoor facility
University Institutions

- **Textbook Collection**
  - Wüllnerstr. 3, 52062 Aachen
  - Phone: 80-94496
  - Opening hours:
    - Mon – Fri 8:30-16:30

- **Main library**
  - Templergraben 61, 52062 Aachen
  - Phone: 80-94459
  - [http://www.ub.rwth-aachen.de](http://www.ub.rwth-aachen.de)
  - Opening hours:
    - Mon – Fri 8:00 – 24:00
    - Sat 9:00 – 24:00
    - Sun 11:00 – 24:00
These slides will go to:
- https://www.informatik.rwth-aachen.de/cms/Informatik/ Studium/Im-Studium/~/cpjfn/Einfuehrungsveranstaltungen/?lidx=1