Software Systems Engineering
Introductory Meeting WS 2015/2016

Dr. rer. nat. Stefan Schiffer

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RWTH Aachen University
Knowledge-Based Systems Group
(Lehr- und Forschungsgebiet Informatik 5)

October 16, 2015
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Master Programme Coordination

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

- Programme Guidance / Study Advisor:
  - Dr. rer. nat. Stefan Schiffer
  - Office hours: by appointment only(!)
  - Mail: sse@kbsg.rwth-aachen.de

- Internet
  - Website: [http://dbis.rwth-aachen.de/SSE/](http://dbis.rwth-aachen.de/SSE/)
  - Mailinglist: please subscribe to mailing list sse2015 at ...
    /mailing-lists/sse20XX
Master Programme Software Systems Engineering

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 degree in Computer Science or a closely related field from an internationally recognized university. The programme is offered in English.

For more information on the programme and how to apply, please follow the links to the left.

The programme is taught in English! 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 application is 15th of March of the corresponding year.

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 2013 takes place on October 9, 2013, at Informatik-Zentrum, room 5054 or 5056!

You can download the 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 on the likes. Once you get admission and you are enrolled you might want to check Formalities to be Completed.
Academic Advisor

- Your Advisor
  - faculty members of the CS department
  - assigned to each student by end of October
  - will advise you regarding the courses you should take
  - will possibly supervise your thesis

- Change of Advisors
  - you may decide to change your advisor
  - may depend on the specialization you choose
  - your new advisor has to agree
  - please contact sse@kbsg.rwth-aachen.de
  - there’s no deadline for a change
Practical Things to Do ...

- Get a computer account
  - *Rechnerbetrieb Informatik* (RBI)
  - user administration office, room 4U16a, Basement, E1
  - [http://www-rbi.informatik.rwth-aachen.de/](http://www-rbi.informatik.rwth-aachen.de/)
  - office hours:
    - Mo: 9am - 12am, 1pm - 7 pm
    - Tu-Th: 9am - 12am, 1pm - 9 pm
    - Fr: 9am - 12am, 1pm - 6 pm
- Send your current mail address to us (if it has changed since application)
- Subscribe to the mailing list sse2015!
Structure(s) in SSE – MPO2011

- There exist different versions of the master examination rules ("Prüfungsordnung", MPO)
- Starting from winter term (WS 2011/2012) SSE programme (again) got a slightly new structure
- You are "MPO2011" (master exam. rules 2011) let people know which version is yours! especially ZPA, student service, and other administr.
- This semester the "Übergreifende PO" comes into effect: some minor changes, but no new major version
- (old structures referred to as "MPO2005" and "MPO2010", none of which is currently active)
SSE: The Programme at a Glance

<table>
<thead>
<tr>
<th>2 years</th>
<th>12 – 35</th>
<th>0 – 35</th>
<th>0 – 35</th>
<th>0 – 35</th>
<th>16 – 35</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Sem.</td>
<td>Theoretical Foundations of SSE</td>
<td>Communication</td>
<td>Data &amp; Information Management</td>
<td>Applied Comp. Science</td>
<td>Software Engineering</td>
<td>30</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Sem.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>30</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Sem.</td>
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<td>30</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; Sem.</td>
<td>Master’s Thesis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>

Table: Structure of the SSE Programme (MPO’2011)
SSE: The Programme at a Glance

What is required? (2 years = a total of 120 ECTS)

Cover courses from five areas:

- Theoretical Foundations of SSE 12 – 35 ECTS
  - at least two courses (min. 12 CP) from “Core Subjects”:
    - Model Checking, Theoretical Foundations of UML, Functional Programming,
    - Logic Programming, Theoretical Foundations of Distributed Systems (until WS 14/15),
    - Satisfiability Checking (since WS 14/15), Foundations of Data Science (since WS 14/15)

- Communication 0 – 35 ECTS
- Data & Information Management 0 – 35 ECTS
- Applied Computer Science 0 – 35 ECTS
- Software Engineering 16 – 35 ECTS
  - mandatory Lecture Software Project Management (4 ECTS)
  - further min. 12 CP from at least two “Core Subjects”:
    - Model-based Software Engineering, Generative Software Engineering, Software Architectures,
    - Object Oriented Software Construction, Designing Interactive Systems, Information Management
    - (a.k.a. Implementation of DB), Safety and Reliability of Software-controlled Systems
SSE: The Programme at a Glance

- **Courses** 90 ECTS
  - Lectures in five areas 68 ECTS
  - two Seminars $2 \times 4 = 8$ ECTS
    at least one has to be from Theo. Found. of SSE/Softw. Eng.
  - one Lab Course 7 ECTS
    ! Seminars and Lab must not be all from same area
  - depth oral colloquium ("Schwerpunktkolloquium") 3 ECTS
    on 2-3 connected courses (often from one area)
    ask examiner (professors) for possible combinations
  - German Language Course 4 ECTS
    for german-proficient students (need proof!): replaceable
    by additional non-technical course (4 ECTS with grade!)

- **Master’s Thesis** 30 ECTS
For Your Orientation: The SSE Map
## Sample Schedule

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>MASTER’S THESIS</td>
</tr>
<tr>
<td><strong>5 courses</strong></td>
<td><strong>3 courses</strong></td>
<td><strong>3 courses</strong></td>
<td><strong>DEPT ORAL</strong></td>
</tr>
<tr>
<td>$3 \times V3\bar{U}2$ $[3 \times 6 \text{ECTS}]$</td>
<td>$3 \times V3\bar{U}2$ $[3 \times 6 \text{ECTS}]$</td>
<td>$3 \times V3\bar{U}2$ $[3 \times 6 \text{ECTS}]$</td>
<td><strong>COLOQUIUM</strong> $[3 \text{ECTS}]$</td>
</tr>
<tr>
<td>+ $V2\bar{U}1$ $[4 \text{ECTS}]$</td>
<td>Proj. Mgmt. $V2\bar{U}1$ $[4 \text{ECTS}]$</td>
<td>Lab Course $4h$ $[7 \text{ECTS}]$</td>
<td><strong>Deph Oral</strong> $[3 \text{ECTS}]$</td>
</tr>
<tr>
<td>+ $V3\bar{U}1$ $[6 \text{ECTS}]$</td>
<td>Seminar 1 $2h$ $[4 \text{ECTS}]$</td>
<td>Seminar 2 $2h$ $[4 \text{ECTS}]$</td>
<td></td>
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<tr>
<td>German-I $2h$ $[2 \text{ECTS}]$</td>
<td>German-II $2h$ $[2 \text{ECTS}]$</td>
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</table>
Chairs/Teaching and Research Areas

- **Overview:**
  

- **12 Chairs**
  - one “chair professor” each (head of department)
  - additional professors (teaching and research areas)

- **Details on chairs:**
  - Follow links on overview site
  - Switch language if necessary
  - Check “teaching” and “research” links
<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>Cloud and Research Topics</td>
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<tr>
<td>1. Introduction</td>
<td></td>
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<tr>
<td>2. Diversity in Tech</td>
<td></td>
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<tr>
<td>3. Women in Tech</td>
<td></td>
</tr>
<tr>
<td>4. Engineering</td>
<td></td>
</tr>
<tr>
<td>5. Security</td>
<td></td>
</tr>
<tr>
<td>6. Accessibility</td>
<td></td>
</tr>
<tr>
<td>7. Diversity in Tech 2</td>
<td></td>
</tr>
<tr>
<td>8. Women in Tech 2</td>
<td></td>
</tr>
<tr>
<td>9. Engineering 2</td>
<td></td>
</tr>
<tr>
<td>10. Security 2</td>
<td></td>
</tr>
<tr>
<td>11. Accessibility 2</td>
<td></td>
</tr>
<tr>
<td>12. Summary</td>
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</tbody>
</table>
Courses Offered

- Filed in one of the five areas
- Information on Courses (mainly lectures)
  - **CAMPUS** (information system of RWTH)
    - [http://www.campus.rwth-aachen.de/rwth/all/groups.asp](http://www.campus.rwth-aachen.de/rwth/all/groups.asp)
    - → Master of Science (M.Sc.)
    - → Software Systems Engineering (M.Sc.)
- German-speaking students may also look at:
  - Master of Science (M.Sc.) → Informatik (M.Sc.) → ...
- Detailed descriptions also on the chairs’ websites
- Some (very few!) courses in Electrical Engineering

- **Introductory Presentation** at beginning of each semester
  this year: 2015-10-16, 14h, Fo1, Kármán Auditorium
  (presentation of courses offered this semester)
Vorlesungen: WS 2013/2014

- Master of Science (M.Sc.)

Aktuelles:

- CAMPUS Schulungsdaten finden Sie im Veranstaltungsverzeichnis des Rechen- und Kommunikationszentrum der RWTH Aachen.
- Sommersemester 2014: Das Sommersemester ist seit 18.03.2013 für Dozenten und Fachstudienberater zur Planung freigegeben. Wichtige Termine der Planungsphase sind:
  - 07.01.2014: Sitzung für Dozenten zur Veranstaltungsverwaltung für gedruckte Verzeichnisse.
  - 27.01.2014: Offizielle Freischaltung des Planungssemesters.
The Master Programme in **Software Systems Engineering** focuses on the design and implementation of complex software systems, including their embedding in technical and socio-technical systems. It is these latter aspects that distinguish this programme from other master programmes in Computer Science. This two-year Master programme is primarily intended for international students holding a Bachelor degree in Computer Science or a closely related field.

Link: [http://isus.rwth-aachen.de/SS17](http://isus.rwth-aachen.de/SS17)

E-Mail: ssse@iksv.rwth-aachen.de

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**Software Systems Engineering (M.Sc.)**

- Theoretical Foundations of Software Systems Engineering
- Communication
- Data and Information Management
- Applied Computer Science
- Software Engineering
- MPD 2016: Theoretical Computer Science
- MPD 2016: Communication
- MPD 2016: Data and Information Management
- MPD 2016: Applied Computer Science
- MPD 2016: Software Engineering
- MPD 2016: Practical Computer Science
- MPD 2015: Areas of Specialisation
- Seminar
- Lab Course
- Non-computer science related studies
- Anfragen

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**Aktuelles:**

- **CAMPUS Schulschneidetermine**: finden Sie im [Veranstaltungskalender](http://isus.rwth-aachen.de/SS17) des Rechen- und Kommunikationszentrums der RWTH Aachen.
- **Sommersemester 2014**: Das Sommersemester ist seit 16.03.2013 bei Dokumentation und Fachstudiengänge zur Planung hingegangen. Richtig Termin der Planungsphase sind:
  - 17.03.2013: Veröffentlichung des vorläufigen Planungsstages.
- **27.01.2014**: Offizielle Freischaltung des Planungssystems.
Seminars & Lab Courses

- **Central allocation procedure**
  within Computer Science faculty
  https://www.graphics.rwth-aachen.de/apse
- takes place end of preceeding semester’s lecture period
  - in January for summer term
  - in June for winter term
- register and choose which seminar(s)/lab you want
  slots are being allotted thereupon
- provide meaningful information, choose carefully!
- http://web-info8.informatik.rwth-aachen.de/stube/Ankuendigung_zentrale_Anmeldung.pdf
- reminder E-Mail with instructions will be send
Information about Exams

For all courses

- exam(s) at the end of the course
- either oral (30-45 min) or written (60 – 90 min)
- admission to exams may have prerequisites
  (e.g., 50 % of homework assignments)

Separate registration for exams needed

- you have to register for each exam via CAMPUS
  - usually either two dates (if written) [de: Klausur]
    or individual dates (if oral) [de: mündl. Prüfung]
  - one CAMPUS-event for every exam, each with a
    modular registration procedure (type b) attached

Registration deadline:

- summer: next to last Friday in May
- winter: next to last Friday in November
(Re-)Registration for Exams

- two exam dates per semester, need extra registration each!
- **no automatic (re-)registration** for exams (no more)
  - if you **fail** an exam, you need to **re-register manually**!
  - you can **de-register** an exam (as often as you want)
    but only until **one week** before the date!
  - registering for the second date only possible if
    - you were registered for the first date via modular procedure
    - first attempt was de-registered / medical certificate / failed
- registration for second attempt via VZPA

- **Changing modules / Dropping a module**
  - If you **fail** an exam **3 times** you fail the programme!
  - **But** you can **change** modules, i.e. drop a module
    and pick another (except for mandatory courses)
  - If you failed an exam **twice** you should **drop it**
Modulare Anmeldeverfahren

- MPO’2011 requires registration via so-called “modulare Anmeldeverfahren” (done in CAMPUS Office)

### Sommersemester

- registration is only possible until the week before the last full week in May!

### Wintersemester

- registration is only possible until the week before the last full week in November!

- proper modular registration for first attempt is a necessary condition for registration for the second attempt!
CAMPUS-Office

- web-based study organizer
  - https://www.campus.rwth-aachen.de/office
  - login with your matriculation number and password

- features
  - browse courses in CAMPUS
  - timetable of your courses
  - list of registered exams
  - results of exams taken so far
  - online-access to central examination office
  - online-access to student secretary
  - ...

settings

CAMPUS

your (course) registrations
+ draft exam registrations
timetable
weekly view

Central Examination Office (ZPA)
registered exams (after deadline)
mark sheet
certificates
exams (de-)registration
student secretary
Central Examination Office (ZPA)

- **Location**
  - in the *Super C* building (Templergraben 57)
  - registration officers in room 2.25
  - Ms. Cuepper, Mr. Reiss

- **Things to do when going to ZPA**
  - show student ID / matriculation number
  - tell the name of the Master Programme (i.e. Software Systems Engineering) and version of master examination rules (MPO’2011)
  - explain what your request is about
Depth Oral Colloquium (D.O.C.)

- Oral examination on connected courses (12–18 ECTS)
- You may have had exams in the individual courses
- You must register the D.O.C. with ZPA!

Procedure is as follows

1. Agree with Professor on courses and date
   He or she has to agree on combination of courses
2. Register D.O.C. with central examination office (ZPA)
   at least one week before the date
3. Take the D.O.C. at the appointed date
4. Let examiner file your mark with ZPA
Master’s Thesis

- Usually during the final six months of the programme
- Try to find a topic early (orientation phase)
- Before:
  - Topic is usually chosen from an area that you want to put emphasis on (i.e., you are very interested in)
  - Registration is necessary (get form via ZPA)
  - Prerequisites: successful completion of 60 ECTS
- After:
  - Thesis will be graded by your first supervisor (CS Prof) and another faculty member (second supervisor, also Prof)
  - You have to present and defend your thesis within an oral (makes up 3 ECTS from the total 30 ECTS)
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

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” at my office
- take certificates to aliens department of local authorities

Further information:
- Ulrike Brands
- ulrike.brands@zhv.rwth-aachen.de
Transfer of Credits

- “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 November (we will send detailed instructions)
- We need:
  - letter containing which courses you want to be transferred
    (incl. your name, email, immatriculation #, prioritization)
  - copy of the transcripts of your previous studies
  - (official) description of grading scheme
Additional Notes / FAQs

- In WS 2011 the “Information Management” course was given in CAMPUS as “Implementation of Databases”
- In CAMPUS, for the lists given for the Core Subjects for the areas *Theoretical Foundations of SSE* and *Software Engineering*, look for “Veranstaltungen” (and do not pay too much attention to “Module”. The former is the list of courses offered this semester, the latter is the list of all modules that are generally considered as Core Subjects in that area.)
- If you have questions on a particular course/lecture, don’t hesitate to ask with the lecturer or better yet a corresponding research assistant.
Questions?