#### Christian Plewnia Academic advisor for SSE

## Introduction to the Master Software Systems Engineering (SSE)

Winter semester 2022/2023, 6th October 2022



Slides will later be uploaded to:

https://www.informatik.rwth-aachen.de/cms/Informatik/Studium/Im-Studium/~cpjfn/Einfuehrungsveranstaltungen/?lidx=1



SSE master program website:

https://sc.informatik.rwth-aachen.de/master-sse/



#### SSE master program coordination team

Head of program: Prof. Gerhard Lakemeyer, Ph.D.



- Academic advisor: Mr. Christian Plewnia
  - E-Mail: <u>sse@cs.rwth-aachen.de</u> (<u>thoroughly read the website before contacting us!</u>)
  - Website: <a href="https://sc.informatik.rwth-aachen.de/master-sse/">https://sc.informatik.rwth-aachen.de/master-sse/</a>



#### SSE master program website

Many of the subsequently presented pieces of information can be found on the SSE website: <a href="https://sc.informatik.rwth-aachen.de/master-sse/">https://sc.informatik.rwth-aachen.de/master-sse/</a>







#### What can you expect from the introduction?

- 1. Is there anything to consider regarding the COVID-19 pandemic?
- 2. SSE master program overview
- 3. Registering for courses (lectures and exercises)
- 4. Registering for exams in RWTHonline
- 5. How to find courses for your SSE studies
- 6. Seminar(s), lab course, DoC, and master thesis
- 7. Conditions (German: Auflagenfächer)
- 8. Transfer of credits (possibility to speed up your SSE studies)
- 9. Personal academic advisor
- 10. Extension of residence permit
- 11. Institutions relevant to SSE students
- 12. Other useful information



Is there anything to consider regarding the COVID-19 pandemic?



## Is there anything to consider regarding the COVID-19 pandemic?

- University life almost back to normal
- The currently still active recommendation by the university:
  - -Wearing of facial masks where many people come together (e.g., lecture halls)
- Carefully read any email announcements by RWTH Aachen University



#### SSE master program overview



#### Goals of the SSE master program

- Provide you with an in-depth education in Software Systems Engineering
- Allow you to specialize by choosing
  - -from many elective subjects (some restrictions apply)
  - one or two of many seminar(s),
  - -one of many lab courses,
  - a depth area oral colloquium (oral examination) in a selection of courses
  - -a master thesis topic in one of many research areas
- Prepare you for more responsibilities in future jobs
  - Ideation and leadership qualities
  - More conceptual knowledge, less focus on implementation work
- Qualify you for a PhD



## SSE master program overview

- Is a 4 semester / 120 ECTS credit points program
  - -ECTS credit points are reflecting a course's workload
  - -30 ECTS credit points are the workload for one semester full-time studying
- There is no pre-defined curriculum ⇒ you are responsible for your own for own studies!
- There are only few mandatory courses & restrictions
- Your studies are regulated by
  - the latest <u>SSE master examination regulations</u>\* (German: "Master-Prüfungsordnung (MPO)")
  - the latest <u>common examination regulations</u>\* for bachelor & master programs (German: "Übergreifende Prüfungsordnung (ÜPO)")

\*official document only available in German



## SSE master program overview (cont'd)

• Structure of study program

Courses	Credit points
Elective courses	72
Seminar	4
Lab course	7
Depth-area Oral colloquium (DO	C) 3
German language course	4
Online course "Scientific Integrity	
Master thesis	30
	120

SSE curriculum / offered courses in RWTHonline (switch to english in the upper right corner)



#### Restrictions on choosing courses

• SSE's elective courses are divided in five subject areas:

Theoretical Foundations of SSE	12-35 credit points	Elective courses catalog  "Core subjects" catalog
Communication	0-35 credit points	Elective courses catalog
Data- & Information Management	0-35 credit points	Elective courses catalog
Applied Computer Science	0-35 credit points	Elective courses catalog
Software Engineering	16-35 credit points	Elective courses catalog  "Core subjects" catalog

SSE curriculum / offered courses in RWTHonline (switch to english in the upper right corner)



## Restrictions on choosing courses (cont'd)

- For the subject area "Theoretical Foundations of SSE"
  - -You must pass at least two courses in the "core subjects" catalog for 12 CPs
- For the subject area "Software Engineering"
  - -You must pass at least two courses in the "core subjects" catalog for 12 CPs
  - You must pass the exam on Software Project Management for 4 CPs
- Credit points exceeding the maximum of 35 credits per subject area are not counted for your SSE master
- Not counted towards the subject area's 35 CPs limit
  - -the first seminar (an optional second seminar is counted!)
  - -the lab course
  - the depth area oral colloquium
  - -the master thesis



#### Some more options / information

- Optionally, you can complete a second seminar
  - replaces a 4 CP elective course
  - the second seminar counts towards the subject area's 35 CPs limit!
- Most courses
  - are either 4 or 6 credit point courses
  - have a lecture and an exercise (often with a <u>separate RWTHonline registration!</u>)
- The courses' exams are usually at the end of the semester
  - Two exams per year, usually both at end of the same semester
- Exam types (decided by teachers)
  - written (60 to 120 minutes)
  - oral (15 to 45 minutes)
- Requirements for exam admission
  - teachers can decide on exam admission criteria (e.g., minimum score in assignments or passing a midterm exam)
  - exam admissions are only valid for one year



#### Some more options / information (cont'd)

- Note when choosing the course "Implementation of databases"
  - -it is part of two catalogs:
    - Subject area "Software Engineering" > Core Subjects Software Engineering
       (most students want this in order to complete their core subjects in the subject area "Software Engineering")
    - Subject area "Data and Information Management"
  - -make sure to choose the correct assignment during the exam registration



#### German language course

- Mandatory course
- German course offered by RWTH Aachen University's language center
  - Courses are offered every semester (there may be additional courses in the lecturefree time)
  - -You need to pass one 4 hours a week-course (= a "4 SWS" course)
  - -Since this German course is a mandatory course for your studies, there are <u>no fees</u> (unless you do not attempt or do not learn and fail repeatedly)
  - If you already started to learn German, you must take a placement test to access higher level German courses
  - More information & registration via the <u>language center's website</u>
- German-proficient students / native speakers (proof needed!) can take another non-SSE course for 4 gradit points as replacement.

  Course registration deadline for this winter term: 10.10.2022



# An exemplary (!) curriculum structure

Semester	Winter / summer tern	ı CP	Schedule
1 <sup>st</sup> semester	winter term	28	<ul> <li>a core subject from the subject area "theoretical foundations of software systems engineering", 6 CP</li> <li>a core subject from the subject area "software engineering", 6 CP</li> <li>2 elective courses, 2 x 6 = 12 CP</li> <li>German course, 4 CP</li> <li>Online course "Scientific Integrity"</li> </ul>
2 <sup>nd</sup> semester	summer term	30	<ul> <li>a core subject from the subject area "theoretical foundations of software systems engineering", 6 CP</li> <li>3 elective courses, 2 x 6 and 1 x 4 = 16 CP</li> <li>software project management lecture, 4 CP</li> <li>(first) seminar, 4 CP</li> </ul>
3 <sup>rd</sup> semester	winter term	32	<ul> <li>a core subject from the subject area "software engineering", 6 CP</li> <li>2 elective courses, 2 x 6 = 12 CP</li> <li>second seminar or an elective course, 4 CP</li> <li>lab course, 7 CP</li> <li>depth-area oral colloquium, 3 CP</li> </ul>
4 <sup>th</sup> semester	summer term	30	<ul> <li>master thesis + master thesis colloquium, 27+3 = 30 CP</li> </ul>
CP = credit points			



Registering for courses (lectures and exercises)



#### **RWTHonline**

- RWTHonline (<a href="https://online.rwth-aachen.de">https://online.rwth-aachen.de</a>)
  - Campus management system of RWTH Aachen University
  - -Enables you to
    - browse your study program's structure (as defined by the examination regulations)
    - browse for courses (more detailed course descriptions are often on the respective chair's website)
    - register & deregister for courses and their exams
    - access your grades of completed courses
    - access studying fee payment status
    - download important documents
  - RWTH Aachen University provides manuals for using RWTHonline <a href="https://wiki-intern.rwth-aachen.de/display/RD/Manuals+for+Students">https://wiki-intern.rwth-aachen.de/display/RD/Manuals+for+Students</a>



#### Registering for lectures & exercises in RWTHonline (lecture/exercise)

- You need to register for each lecture and each exercise via RWTHonline
- With the registration you
  - usually get access to a <u>RWTHmoodle</u> course room providing all learning materials (slides, exercise sheets, lecture recordings, ...)
  - most courses' lecture dates and meetings are added to your calendar in RWTHonline
  - you receive announcements by the course's teachers
- Registration period
  - there is no unified registration period
  - each course can have individual registration periods ⇒ check registration periods of interesting courses timely!
- What if I cannot register for a course in RWTHonline?
  - maybe the teacher has not yet set up the registration (contact the teacher)
  - or registration is done outside of RWTHonline (study the course descriptions)
- Try to attend the courses' first lecture to receive organizational information!



Registering for exams in RWTHonline



#### Registering for exams in RWTHonline

- Registering for lectures & exercises in RWTHonline only allows you to participate in a course
- Exams require a separate registration (= separate from lectures & exercises)!
- Exam dates
  - Most computer science courses offer two exam dates per semester
  - Both dates are usually at the end of the semester within a few weeks
  - Only possible to register for one exam date at a time (in doubt, register for the first one)
- Exam registration window
  - Usual window for 1<sup>st</sup> exam in winter terms: 1<sup>st</sup> October to 15<sup>th</sup> January
  - Usual window for 2<sup>nd</sup> exam: till 7 days before exam date
    - Note: in recent semesters some dates differed due to COVID-19 pandemic always rely to the latest official information
  - Carefully check dates for each course as deadlines might differ for some courses
  - Take note of announcements
  - Do not forget the exam registration! <u>Late registrations are generally not possible!</u>



#### Deregistering from exams

- <u>Deregistration</u> from exams
  - Usually, possible until three working days before the exam date
  - -COVID-19 pandemic: other procedures applied in the last semesters
- Not taking an exam because of illness
  - -a medical certificate must be issued by a doctor on the day of the exam
  - must be handed in to the central examination office at latest on the third working day after the respective exam
  - missing a registered exam without medical certificate counts as fail
- See also <u>registration cancellation and withdrawal</u> website



#### Failing exams / exam attempts

- Limit of attempts
  - You can take each exam at most three times!
  - If you fail a course three times, you cannot complete that course any more
  - If failing a course would end your studies, you can take an oral supplementary examination (a special fourth attempt that you must apply for in time)
- Exam registration
  - You need to <u>actively register for every exam attempt on your own!</u>
  - If you fail an exam attempt or deregister from it (before the deadline or by providing a medical certificate if you are ill), you need to actively register for another attempt
  - You can only register for a 2<sup>nd</sup> exam attempt once the results of the 1<sup>st</sup> exam attempt are published



How to find courses for your SSE studies



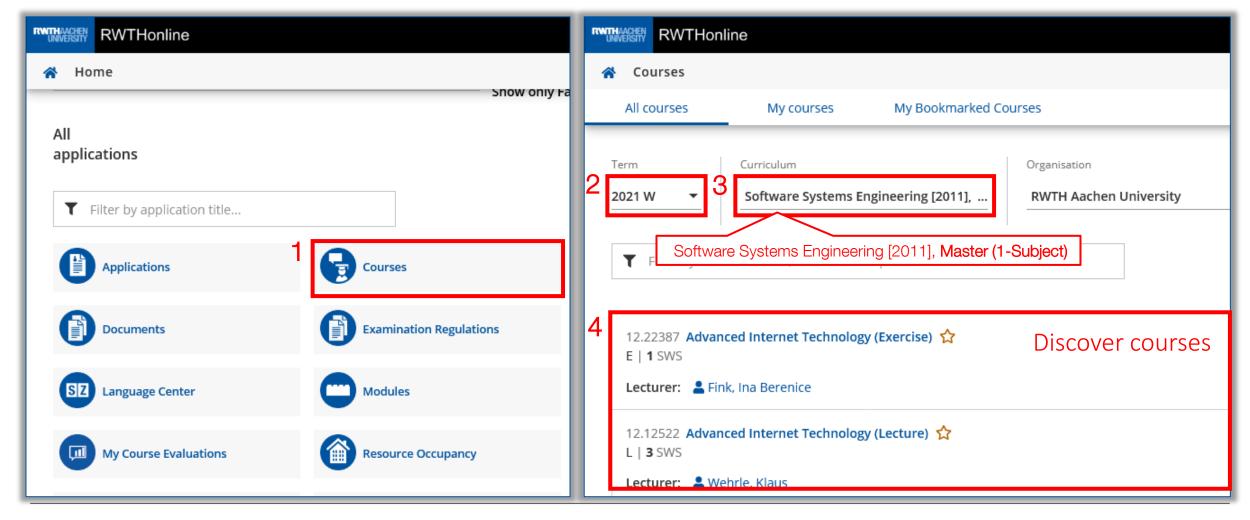
#### How to find courses for your SSE studies

- There are many ways to find courses:
  - 1. Browse RWTHonline's semester course list for the SSE master program
  - 2. Browse RWTHonline's curriculum support for the SSE master program
  - 3. Browse RWTHonline's semester plan support for the SSE master program
  - 4. Have a look at the websites of the chairs and research groups of the <u>computer</u> <u>science department</u> (see <u>list of research areas</u>)
  - 5. Watch the <u>elective course presentation videos</u>
  - 6. For a more comprehensive overview of all courses, there is also an <u>unofficial</u> course overview website created by one of our students
- Get an impression first
  - 1. In the beginning of a semester, attend a variety of courses (more than you need)
  - 2. After a few lectures, decide on a selection of courses you want to complete



#### How to find courses for your SSE studies – Option 1

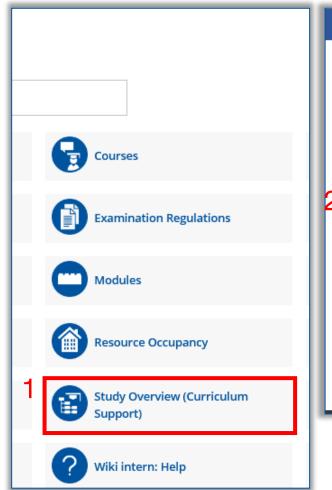
You can browse RWTHonline's semester's course list

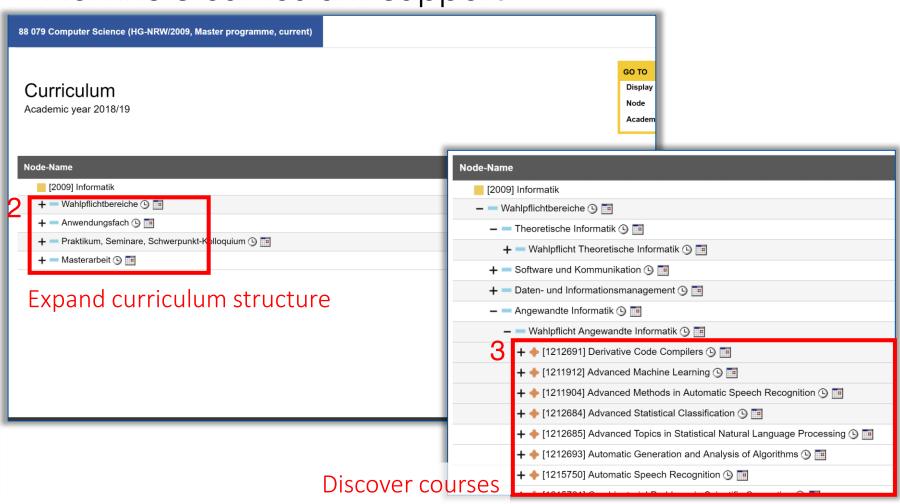




## How to find courses for your SSE studies – Option 2

#### You can browse RWTHonline's curriculum support

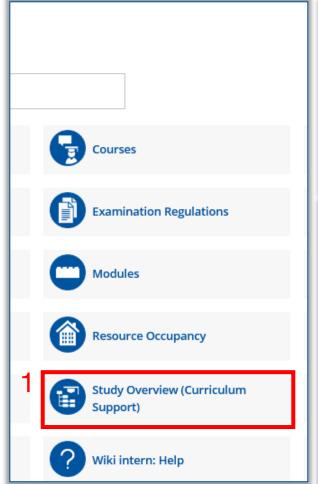


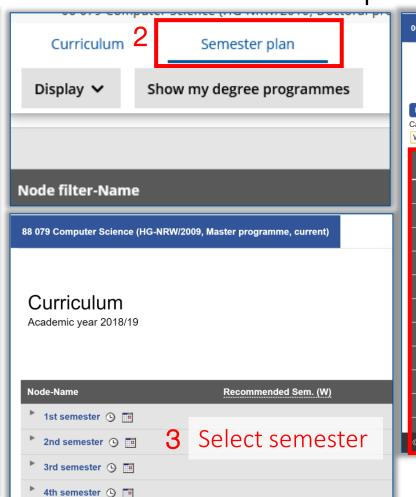


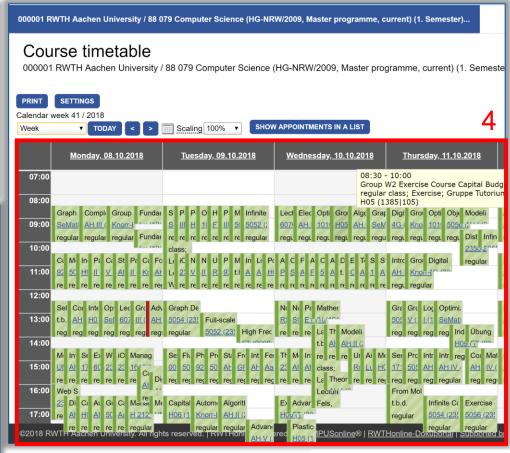


## How to find courses for your SSE studies – Option 3

You can browse RWTHonline's semester plan support







Discover courses



Seminar(s), lab course, DoC, and master thesis



#### Seminar(s) & lab course

#### Seminar

- is about independently researching a topic often using given literature (e.g., conducting a literature survey, writing a paper, and giving a talk)
- seminars are offered by many chairs and research groups on various topics
- typically, 10 to 30 students per seminar
- It is possible to do a second seminar (replacing an elective course)
- the first seminar is not counted for the subject area credit limit

#### Lab course

- Is about solving a practical task (e.g., development and presentation of prototypes)
- labs are offered by many chairs and research groups on various topics
- typically, 10 to 20 students working in teams
- industry internships cannot be recognized as a lab
- the labs is not counted for the subject area credit limit
- Seminar and lab: max. of three attempts (failing three times ends your studies!)



#### Seminar(s) & lab course (cont'd)

- Registering for seminar and lab seats is independent of RWTHonline
  - -The CS department uses a central registration system for all seminars and labs
  - Registration windows
    - June/July for the winter semester and in
    - December/January for the <u>summer semester</u>
    - Registration via: <a href="https://supra.informatik.rwth-aachen.de">https://supra.informatik.rwth-aachen.de</a>
  - -After seat assignment, either
    - you are asked to register for the assigned seminar/lab in RWTHonline, or
    - the teacher registers you
- Seminar / lab organization usually announced in kickoff meeting
- Withdrawal from seminar / lab seat
  - within three weeks after the kickoff meeting without failure (after this it counts as fail)
  - -tell your teacher & fellow students + deregister in RWTHonline if you are registered



#### Depth-area Oral Colloquium (DOC)

- DOC = oral exam on related topics
  - must cover courses for 12 to 18 credit points
  - usually, at least three courses
  - you are allowed to choose courses for which you already passed an exam
  - requirement: examiner must agree on course selection
- Credit points & grading
  - DOC yields 3 credit points
  - DOC grade is weighted with a factor of 4 for the final grade of your SSE master (as if the DOC was worth 12 CP)
- Registration
  - 1. contact examiner from the area you want to be examined in (examiners are usually the professors; see respective chair's website)
  - 2. discuss course selection and examination date with examiner
  - 3. personal registration at the central examination office at least one week before the exam



#### Master thesis

- Independent work on a topic using skills & methods learnt during studies
- Consists of research work, a thesis report, and a final talk
- Master thesis topic
  - is handed out (exclusively) by a computer science professor (and his/her research assistants)
  - -can be done in an industry cooperation only if a professor agrees to supervise it (e.g., within a chair's existing industry cooperation project)
- Thesis is evaluated by two examiners (both being professors)
- If failed, the master thesis can be repeated once



#### Master thesis (cont'd)

- The master thesis yields 30 credit points (=one full semester)
  - 27 credit points for written thesis,
  - 3 credit points for presentation / defense
- Usually done in final semester
- Start looking for a topic early (usually 2-3 months before you want to start; often you have an orientation phase before registering the thesis)
- Finding a master thesis topic
  - browse websites of chairs and research groups that research in the area of your interest
  - contact PhD students who work on interesting topics and ask for thesis topics if none are listed on the respective website
- Registration
  - before you are allowed to register the thesis
    - you must have <u>at least 60 credit points</u>
    - you must have <u>completed the online course "Scientific Integrity"</u>
    - if your admission was conditional: you must have completed admission conditions / prerequisites (German: "Auflagen")
  - topic is handed out by supervising professor (primary examiner)
  - registration procedure starts with getting the registration form from the central examination office (=current process, inform yourself about the latest process when you are about to start the master thesis)



Conditions (German: Auflagen)



## Conditions (German: Auflagen)

#### The following is relevant only if your admission was conditional:

- You need to complete some additional course(s) as condition / prerequisite (German: "Auflage" or "Auflagenfach") for your studies in SSE.
- In many cases a condition is the bridge course "Foundations of Informatics" / "[BrKInf] Bridging Course Computer Science" (the later name is used in RWTHonline)

Note: Do not confuse the bridge course that you may have as condition for SSE with the <u>bridge</u> course computer science "Vorkurs Informatik" (this is the wrong bridge course)!

- You need to complete the conditions before registering your master thesis.
- In order to complete the conditions, you need to register yourself for the respective courses and exams.
- If the registration is not possible via RWTHonline, contact the teachers as soon as possible, explain your situation, and ask them to manually register you for the course, its online learning room, and the exam.



#### Transfer of credits



#### Transfer of credits

- A transfer of credits allows the recognition of certain courses for your SSE master studies. This can "speed up" your studies.
- What can be transferred
  - Only applicable to courses
    - from a bachelor (>= 3.5 years) or master program
    - related to computer science / SSE (may be similar to courses in the SSE course catalog)
    - on a master's level
    - with a grade better than a German 3.0
  - Maximum: 30 credit points



#### Transfer of credits (cont'd)

- Submitting the transfer of credits application
  - use the examination board <u>transfer of credits web application form</u> to generate your application letter
  - you must provide a list courses, you want to be transferred (course name and course id / number, if applicable)
  - -you must attach
    - official transcript(s) of your previous studies
    - official course descriptions (documents or links) for the courses you want to transfer
    - (official) description of the conversion of the credit points to ECTS credit points (or workload per credit point)
    - (official) description of the grading schema



#### Personal academic advisor



#### Personal academic advisor

- Besides the academic advisor for the SSE master program, SSE students can get a personal academic advisor
- The personal academic advisor
  - is a faculty member of the computer science department
  - -can advise you regarding your SSE studies and course selection decisions
- The advisor assignment is usually done mid of November (you will be notified)



# Extension of residence permit



#### Extension of residence permit

- If you actively study SSE but you cannot complete the SSE master program in time, it is possible to extend your residence permit.
- Procedure:
  - -Get your current transcripts of record from the central examination office
  - Get a certificate from the International Office
  - -Get an academic progress certificate from your academic advisor for SSE
  - -Take the documents to the Immigration Office of the city of Aachen

The Immigration Office needs time to process your application. The recommendation is to take the documents <u>six weeks before your resident permit expires</u> to Aachen's Immigration Office.

For the latest information & details see RWTH Aachen University's "Applying for and Extending Your Residence Permit" website.



Institutions relevant to SSE students



#### Institutions relevant to SSE students

#### A selection of some relevant institutions (there may be more...):

Name		Purpose / offerings	Contact / address
English: German:	SSE academic advisory Fachstudienberatung SSE	Advisor for the SSE master program. Contact only for questions / advice specific to the SSE master program.	Contact: Mr. Christian Plewnia E-Mail: <a href="mailto:sse@cs.rwth-aachen.de">sse@cs.rwth-aachen.de</a> Website: <a href="mailto:link">link</a>
English:	International office	Team of advisors for international students. Contact for any questions / advice related to being an international student. Not for SSE specific questions!	Website: <u>link</u>
English: German:	Central examination office Zentrales Prüfungsamt (ZPA)	RWTH Aachen University's administrative office for exams. Contact for student record issues.	Contact: Mrs. Gaby Cüpper (current contact for SSE; for latest see contact directory) Website: link Address: SuperC building, Templergraben 57



# Institutions relevant to SSE students (cont'd)

Name	Purpose / offerings	Contact / address
English: Computer science examination board German: Prüfungsausschuss (PA) Informatik	Computer science department's board supervising the academic education and deciding on applications by students.  Examples for applications:  Transfer of credits  Drop an elective course  Disregard grade(s) in final grade computation  Change of master thesis title  Extend deadline of master thesis (only for severe reasons!!!)	Website: link Application forms: link



# Institutions relevant to SSE students (cont'd)

Name	Purpose / offerings	Contact / address
English: Computer Science Library German: Fachbibliothek Informatik	Library of computer science text / course books and journals. Offers  • seminars on literature surveys;  • learning spaces (indoor & outdoor)  • toys and facilities for students with babies	E-Mail: biblio@informatik.rwth-aachen.de Website: link Address: Computer Science building (German: Informatikzentrum), Rooms 4001- 4007, Ahornstr. 55, 52074 Aachen
English: Textbook collection German: Lehrbuchsammlung	Library of text / course books that students can borrow to take home.	Website: <u>link</u> Address: Wüllnerstr. 3, 52062 Aachen
English: University (main) library German: Universitätsbibliothek	Large library of books & other publications (some can be borrowed to take home).	Website: <u>link</u> Address: Templergraben 61, 52062 Aachen



# Other useful information



#### Other useful information

- Staying abroad for one semester
   Please contact the academic advisor for (outgoing) exchange students:
   Mr. Dirk Thissen (<u>student-exchange@cs.rwth-aachen.de</u>)
- RWTH Aachen University Sports (<u>link</u>)
  - -Offers plenty of sports activities (few free of charge, most for a fee)
  - Many activities require registration at the beginning of semester
  - -Some activities have an additional registration window in the mid of the semester



#### Important knowledge summarized

- You are responsible for organizing your SSE studies
- Be <u>aware of deadlines</u>, e.g.
  - -lecture & exercise registration usually via RWTHonline
  - exam registration & deregistration usually via RWTHonline
  - seminar & lab registration via the computer science department's seminar and lab registration system
  - residence permit extension
- Deadlines are hard deadlines (no negotiation possible!)
- Be <u>aware of the limited examination attempts</u> (depending on the course, you may fail your SSE master if you exceed the attempts!)
- Create a plan for your whole SSE studies (not only the next semester)



# Step by step guides in this slide deck's appendix

#### Questions?



Slides will later be uploaded to:

https://www.informatik.rwth-aachen.de/cms/Informatik/Studium/Im-Studium/~cpjfn/Einfuehrungsveranstaltungen/?lidx=1



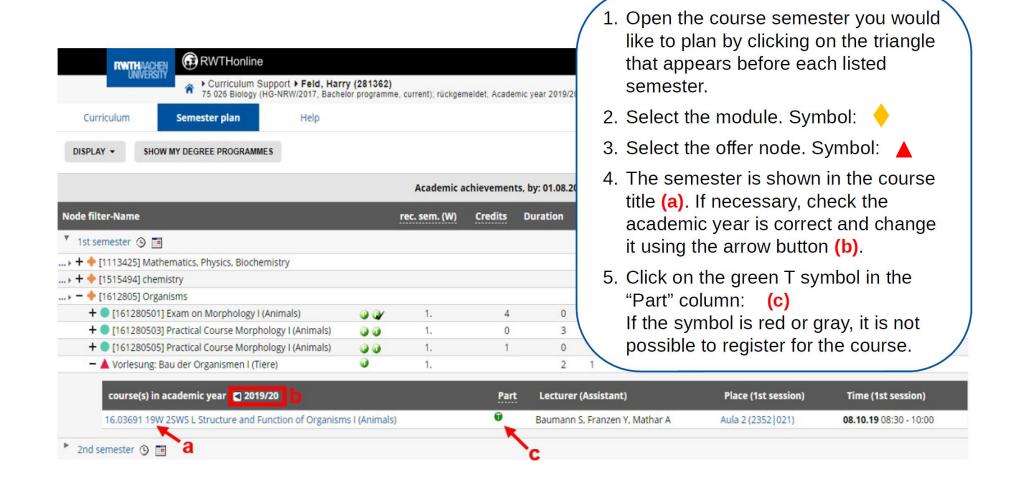
German language course

(registration deadline for winter term 2022 is 10<sup>th</sup> October!) <a href="https://www.sz.rwth-aachen.de/go/id/lgny/lidx/1">https://www.sz.rwth-aachen.de/go/id/lgny/lidx/1</a>

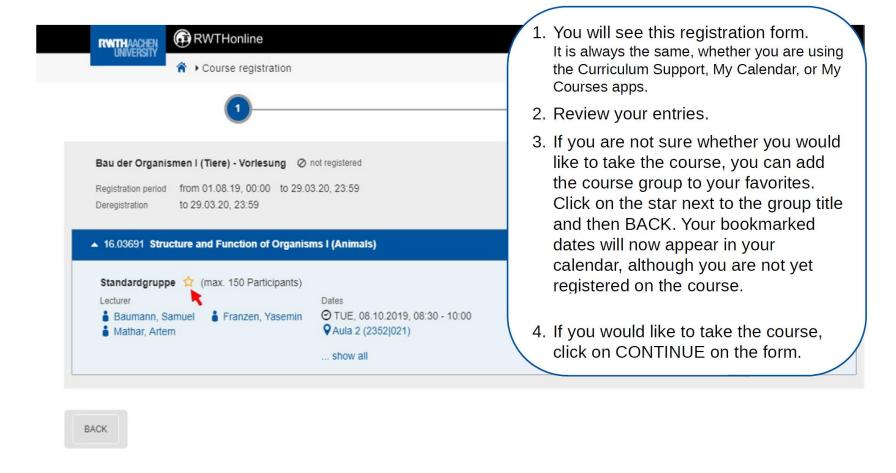


Appendix: Registering for lectures & exercises in RWTHonline in RWTHonline

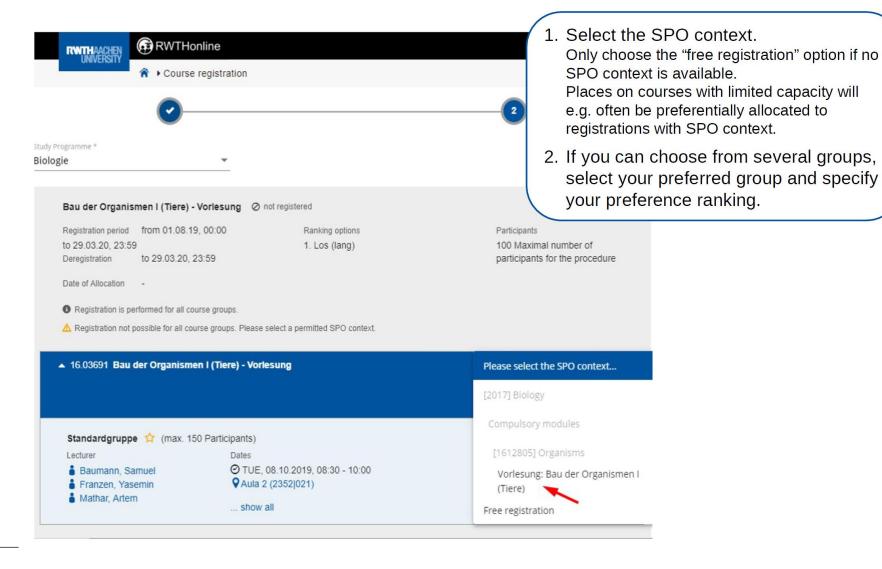




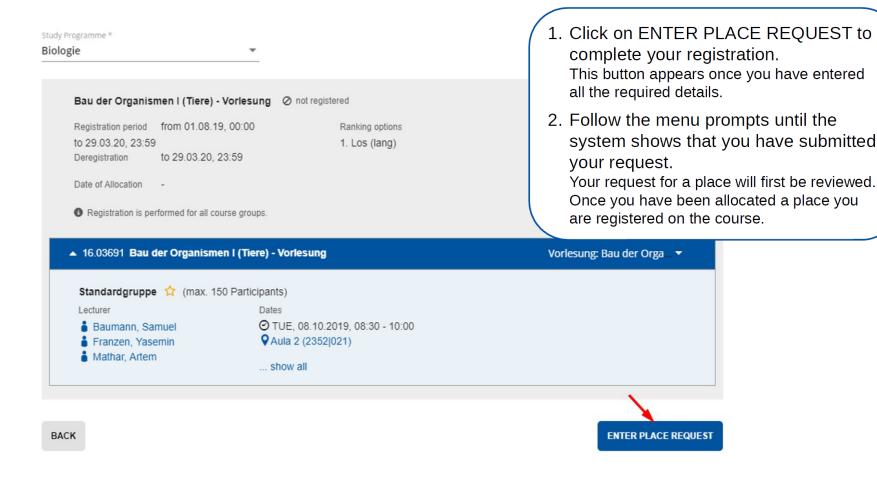




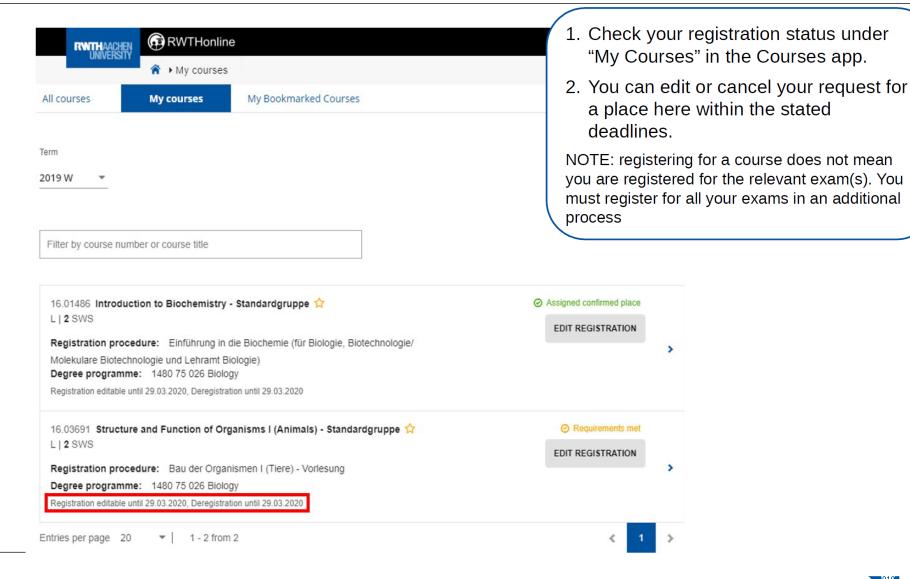










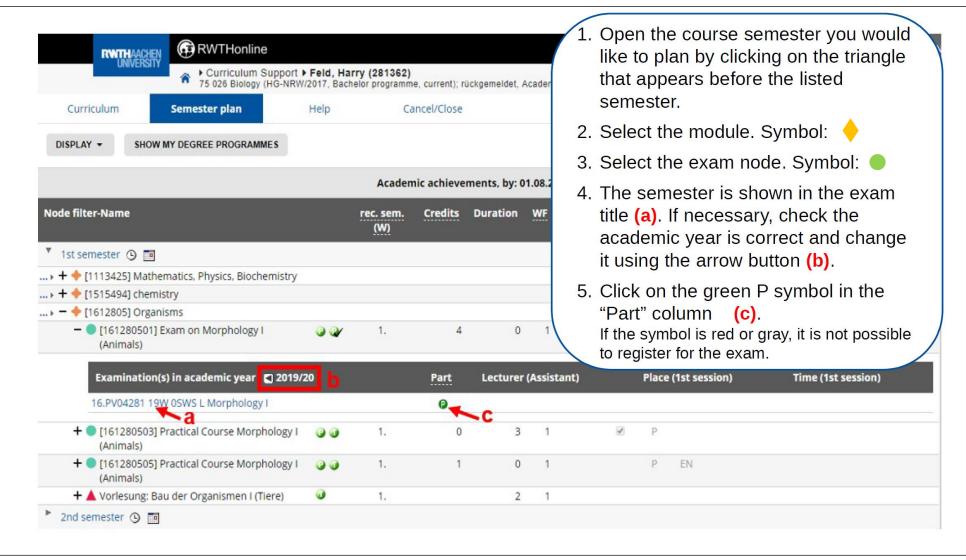




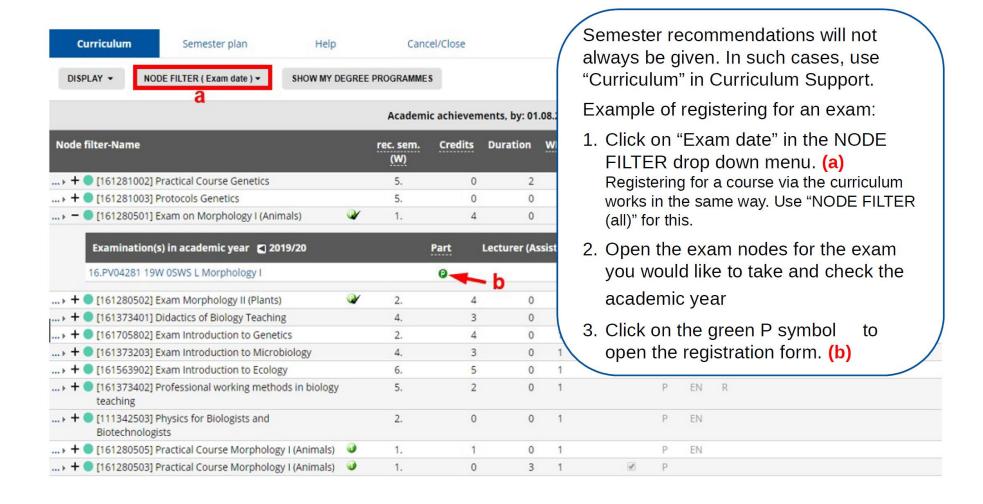
Appendix: Registering for an exam in RWTHonline



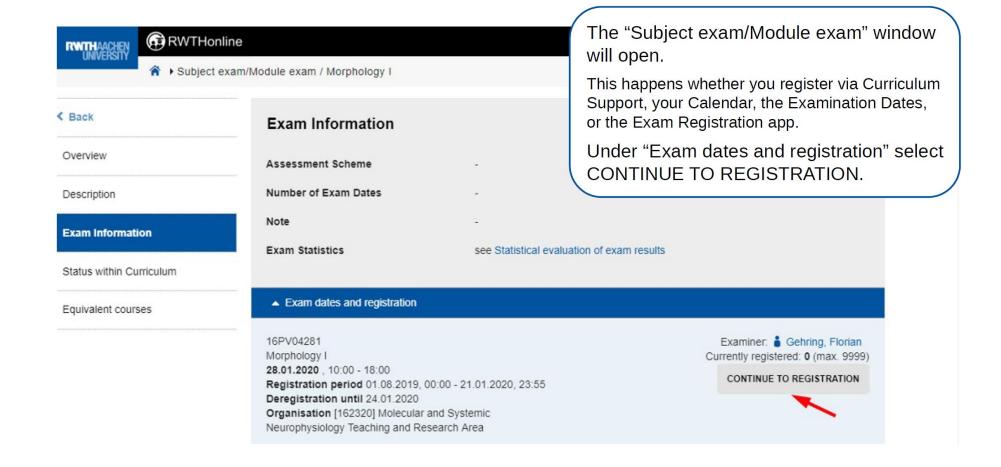
#### Registering for exams in RWTHonline



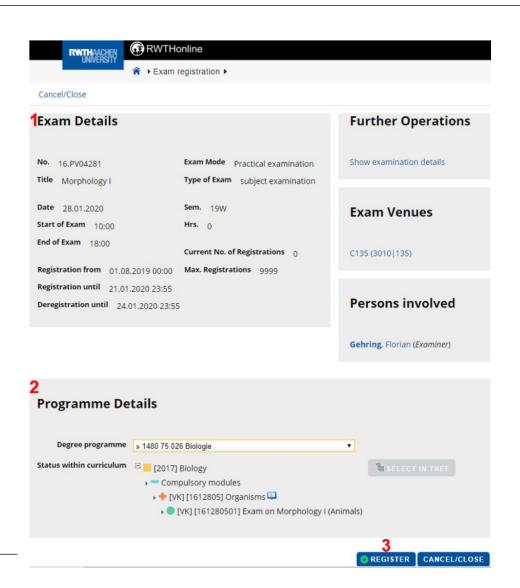












- 1. Check the exam details.
- 2. Make sure your programme details are correct.
- 3. Click on REGISTER and follow the menu prompts until the system confirms you are registered.

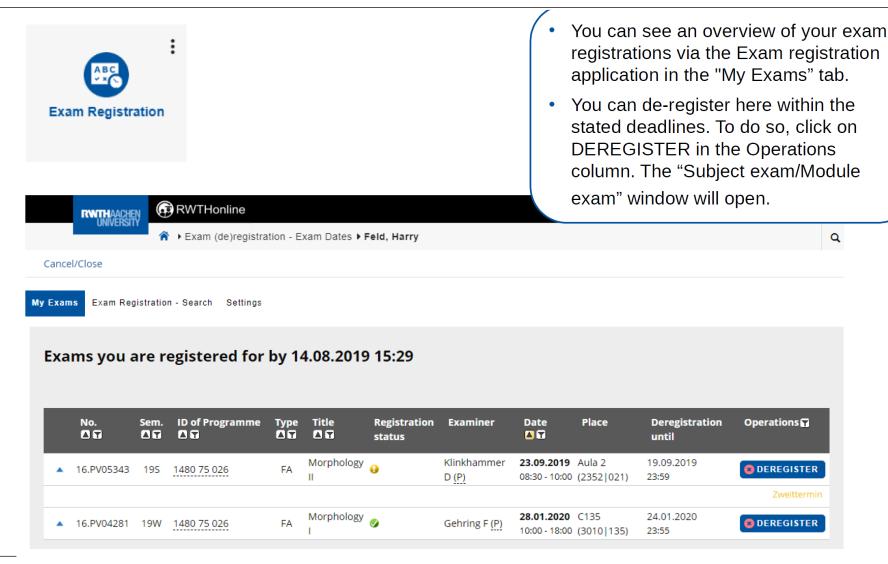
It is only possible to be preliminarily registered for some exams.

#### 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.







Appendix: Deregistering from an exam



#### Deregistering from exams (cont'd)

