The Saarbrücken Graduate School of Computer Science

Graduate School preparatory phase program

(early-entry option with an excellent Bachelor's degree)

SAARLAND UNIVERSITY

SAARBRÜCKEN GRADUATE SCHOOL OF COMPUTER SCIENCE

Guiding principles:	* compulsory breadth requirement in the core courses
	* reduced compulsory core course requirements to allow for stronger specialization
	* more time for research (as early as possible)
	* (retroactive compatibility with the Master's in CS)

Main goal of the preparatory phase:

Besides broadening and deepening your academic knowledge, the main goal of the preparatory phase is to find a research area and a topic for your doctoral thesis work as well as an advisor who is willing to supervise and fund this work.

Graduate students in the preparatory phase of their doctoral studies are expected to complete **90 ECTS** points according to the following table.

Category	Selection description	Conditions	Credit Points (ECTS)	Total CP
Compulsory	3 core	from 3 of 4 groups (breadth) cf. table below	27	34 graded
	1 seminar		7	
Compulsory electives (in CS) and optional electives	core, advanced, seminars (max. 1 more graded) approved minor electives	free selection from all our Masters' programs (more freedom)	variable	(28-38) graded (or more)
	Language *(optional)*	max. 6 CP	6 ungraded	*and* up to total: (0-10) ungraded
	Tutor *(optional)*	4 for each different course	4 ungraded each	
Research Immersion Labs		2 in 2 different research groups	6+6 ungraded	18 CP (research)
Research Immersion Lab extension	extension of one of the previous RILs (with future supervisor)	in well-founded cases, a third RIL instead	6 ungraded	
				SUM: 90 (+x)
Qualifying exam	to enter Faculty's PhD list	given at least 60 ECTS in prep phase and supervisor commitment		pass/fail

Group distribution and selection of the compulsory **core courses** (at least three from three different groups must be taken - 9 CP each):

Group A	Group B	Group C	Group D
Algorithms & Data Structures	Semantics	Computer Graphics	Operating Systems
Discrete Optimization	Verification	Image Processing & Computer Vision	Data Networks
Complexity Theory	Computational Logic	Artificial Intelligence / Automated Planning	Distributed Systems
Cryptography	Automated Reasoning	Digital Transmission, Signal Processing	Software Engineering
Machine Learning	Compiler Construction	Pattern and Speech Recognition	Database Systems
Computer Algebra		Bioinformatics	Embedded Systems
Continuous Optimization		Human-Computer Interaction	Security
Convex Analysis & Optimization			updated Apr. 2024

N.B.: compulsory core **breadth requirement**: no mimicking of specialized MSc programs permissible, e.g., it is possible to take both Cryptography and for overall credit, however, they do not count for covering 2 compulsory groups.

Further compulsory and elective credits:

in keeping with the overall credit distribution above and according to the regulations and freedoms of the Masters' programs

(advanced lectures, another seminar/not the Master's seminar/, language course(s), tutorial assistant credits, up to one more research immersion lab, etc.)

Research immersion labs:

These are intended to help you get acquainted in depth with at least **two** research groups, their work and their research approach. It also gives research groups the chance to get to know you as a prospective PhD student. These labs each amount to 6 ECTS points (about 200 hours of work) and accompany your studies part-time during the lecture period and can extend to full-time during the semester breaks.

RIL extension:

Once you have settled on a future advisor after a successful RIL, it may be extended for a further 6 ECTS to prepare for the qualifying exam.

When in doubt regarding course selection or planning the qualifying exam, please seek guidance from the Graduate School office!

We are very happy to help. (https://www.graduateschool-computerscience.de/administrative-office/)

Moving from the preparatory to the dissertation phase (via the Qualifying Exam):

The **main goal** of the preparatory phase is to find a research area and a **topic** for your doctoral thesis work as well as an **advisor** who is willing to supervise and fund this work.

Therefore: A student can take the Qualifying Exam **if 30 or fewer credit points remain** to be completed and the student has found an advisor.

The remaining credits **must** be completed during the dissertation phase before thesis submission.

(covered in §3 (4) Promotionsordnung/PhD regulations)

Compatibility with the Master's in CS is given, since the extended RIL can be graded retroactively and recognized as the Master's seminar.

Some care must be taken regarding course selection to also satisfy constraints in the CS Master's. Do note that (core) course selection should not only mimic one of the specialized MSc programs. For quick comparison, here's a simplified summary of our CS Master's program:

Category	Selection description	Credit Points (ECTS)	Total CP
Compulsory	3 core	27	
	1 seminar	7	34 graded
Compulsory electives (in CS)	core, advanced, max. 1 more seminar	variable	27-31 graded
Free optional electives	Language	max. 6	
	Tutor	4 each, if for different courses	
	approved minor electives	variable	
	Master Praktikum	6	up to 17 ungraded
Master's seminar			12 graded
			SUM: 90(-94) CP
Master's thesis			30 graded

A Master's thesis would still need to be submitted.

Helpful links:

Graduate School
https://www.graduateschool-computerscience.de/preparatory-phase/
https://www.graduateschool-computerscience.de/administrative-office/

Study coordination for Masters' programs
https://saarland-informatics-campus.de/en/studium-studies/#guidance-for-students
https://saarland-informatics-campus.de/en/studium-studies/#courses-and-lecturers