

The preparatory phase

Graduate students in the preparatory phase of their doctoral studies are expected to complete 90 ECTS points. Depending on your previous academic background, coursework can be partially or completely waived. This is always decided on an individual basis.

Core course selection:

In the preparatory phase, graduate students must take **five** core courses, at least one from each group.

Group A	Group B	Group C	Group D
Algorithms and Data Structures	Semantics	Computer Graphics	Operating Systems
Optimization	Verification	Geometric Modeling	Data Networks
Complexity Theory	Computational Logic	Image Processing	Distributed Systems
Cryptography	Automated Reasoning	Scientific Visualization	Software Engineering
Machine Learning	Computer Architecture	Pattern and Speech Recognition	Information Retrieval
Computer Algebra	Compiler Construction	Bioinformatics	Database Systems
		Telecommunications	Embedded Systems
		Artificial Intelligence	Security

Other courses:

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 amount to about three months of work (6 ECTS points) and accompany your studies part-time during the lecture period and extend to full-time during the semester breaks.

Doctoral privatissima: These specialized courses are offered exclusively for students of the Graduate School, typically for more advanced students in the preparatory phase to explore the limits of a particular field. They are restricted to a small number of participants, i.e. 5-6 students, and count for 6 ECTS points. The format of these courses can vary greatly but may not interfere with regular course scheduling. You will be required to take **two** of these.

Further credits according to the regulations and freedoms of the Masters programs (advanced lectures, at least one seminar/not the Masters seminar/, one language course, tutorial assistant credit, up to one more research immersion lab, etc.).

Other goals 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.

When all these requirements have been fulfilled, you may ask to take the **qualifying exam**. Please see the separate information sheet.