

Master in Computer Science

Presentation of the new curriculum

Objectives

- Keep/reinforce the solid theoretical/formal foundation of the program
- Make the transition from Bachelor to Master at TUK as well as entering our Master program as external student easier
- Improve robust modular structure of our CS specializations
- Significantly increase flexibility for choices of non-CS modules

Support:

- “traditional” minor subject, and
- “application” (as in CS for applications program), but also
- mix of modules from different departments, as well as
- no non-CS modules at all!

Structure of Master Program

Master Thesis (30 CP)

Electives (56 CP or more)

Specialization 1
in Computer
Science

(28 CP or more)

Specialization 2
in Computer
Science

(12 CP or more)

**Computer
Science
Theory**

(8 LP or more)

**Formal
Fundamentals**

(8 LP or more)

Free Choice (up to 34 CP)

Supplement
(up to 34 CP)

Computer Science Theory

- Graphs and Algorithms (4C+2R; **9 CP**)
- Advanced Algorithmics (4C+2R; **8 CP**)
- Concurrency Theory (4C+2R; **8 CP**)
- Advanced Automata Theory (4C+2R; **8 CP**)
- Complexity Theory (4C+2R; **8 CP**)
- Verification of Reactive Systems (4C+2R; **8 CP**)
- Machine Learning I (4C+2R; **8 CP**)

Formal Fundamentals

This section includes one or two formal module(s) of at least 8 CP in the following areas

- „Computer Science Theory“ (previous slide)
- „Algebra“
- „Mathematical Modelling“
- „Stochastics/Statistics“
- „Analysis“
- „Electrical Engineering“
- „Mechanical Engineering“

Specializations 1 and 2

- New structure
 - ≥ 28 CP of lectures, seminar and project in specialization 1
 - ≥ 12 CP of lectures in specialization 2
- All specializations have “foundations” courses
 - includes bachelor “core” modules from the old program
- Available specializations (1 and 2)
 - Algorithms and Deduction
 - Information Systems
 - Communication Systems
 - Scientific Computing
 - Embedded Systems and Robotics
 - Intelligent Systems
 - Software Engineering

Supplementary Block

- Free choice of modules up to 34 CP
 - any master-level module from CS or other study programs at TUK
 - 4 - 8 CP of modules for interdisciplinary skills (personal development, social/ethical aspects of CS, language skills, ...)
 - up to 8 CP may come from a Bachelor's degree program of other study programs
 - at most one additional CS specialization project may be selected
- Objectives
 - advanced education in computer science
 - development of competencies in certain areas of application
- **Approval of mentor is required!**

Who Is Affected?

Starting WS 2018/19, **all new Master students** have to enroll in the new program.

- External applicants entering our master program
- Graduates of Bachelor of CS and CS for applications programs who are transitioning into their master studies (without any conditions/prerequisites)

Students who **enrolled earlier** have the **choice** of continuing in the old program or switching to the new one.

Possible Reasons For Switching

- No compulsory minor subject
- New structure allows the flexible selection of modules related to an application area and unrestricted combination with CS specializations/modules
- Improved transition from Bachelor to Master or entry into the Master due to additional foundation courses for the specialization areas

Possible Downsides of Switching

- Additional formal foundations module required
 - Switching at the final stretch of your master studies may be problematic
 - maybe there is no room for addtl. formal foundations
 - maybe you would lose some CPs you already earned because you hit the max. limit of the supplementary block
- ⇒ Check for yourself and/or ask for help

How Can I Switch?

- How and where?
 1. Consult your Mentor
 2. Consult the Examinations Office
- Deadlines
 - **in any case, please consult your mentor first**
 - you should change before (November 16) – if you change from the old CS curriculum to the updated CS curriculum
 - if you change from CS in Applications to the new CS Master program - **please consult the Head of the Examination Board first**

Further Questions

- Please use our Q&A system for additional questions (from End of June):
 - <https://q2a.cs.uni-kl.de/>
- You may always consult your mentor or the course guidance service (Bogner / Schürmann) for individual requests:
 - study@cs.uni-kl.de

(Open Questions)

- Will there be any CP for university political engagement in the future?
- Can I study the new master's program with a bachelor's degree in applied computer science?
- More details for the softskill / off-topic Qualification would help. Could a little project (3CP in electrical engineering, might give 4 CP there) also suite this?
- Is it ok to visit advanced mathematics master-lectures for the formal foundations block?
- Which deadlines apply to the change/transfer?
- Is it possible to switch between the old application areas of the old study program even after the introduction of the new study program?
- What advantages/disadvantages does a change offer me?
- Where can I get the form for the examination plan in the supplement? Who can approve the plan?