

Computer Science Curriculum (full-time)

Valid from Autumn Semester 2021/2022 / 02.06.2022

| Semester | Context Modules | Project Modules | Subject-Specific Modules | | | | | Mathematics and Natural Science Modules | | | |
|------------|--|--|--|--|-------------------------------------|------------------------|---|---|---|---|--|
| Semester 6 | Elective Module Context 2 | Bachelor Thesis: Computer Science DE/EN 12 | Elective Module 2 4 | Elective Module 4 4 | Elective Module 6 4 | Elective Module 8 4 | | | | | |
| Semester 5 | Elective Module Context 2 | Elective Module Context 2 | Project Thesis: Computer Science DE/EN 6 | Elective Module 1 4 | Elective Module 3 4 | Elective Module 5 4 | Elective Module 7 4 | Elective Module Cross-Curricula 4 | | | |
| Semester 4 | Business Administration DE 2 | Software Project 4 DE/EN 4 | Software Engineering 2 DE 2 | Operating Systems DE 4 | Computer Engineering 2 DE 4 | IT Security DE 4 | Machine Learning und Data Mining DE 4 | | Higher Mathematics for Computer Scientists 2 DE 4 | Physics Engines DE 2 | |
| Semester 3 | Communication Competence 3 DE/EN 2 | Software Project 3 DE/EN 4 | Software Engineering 1 DE 4 | Web Development DE 4 | Computer Engineering 1 DE 4 | | Algorithms and Data Structures DE 4 | Stochastics and Statistics DE 4 | Higher Mathematics for Computer Scientists 1 DE 4 | | |
| Semester 2 | Communication Competence 2 DE/EN 2 | Software Project 2 DE 4 | Programming 2 DE 4 | System-oriented programming DE 4 | Communication Technology DE 4 | | Theory of Computation DE 4 | Analysis 2 DE 4 | Linear Algebra DE 4 | | |
| Semester 1 | Communication Competence 1 DE/EN 2 | Software Project 1 DE 4 | Programming 1 DE 4 | Databases DE 4 | | | Information Theory and Coding DE 4 | Analysis 1 DE 4 | Discrete Mathematics DE 4 | Electronics and Digital Technology: Basic Principles DE 4 | |

Module Name
Language of Instruction
Credits

Overview of Computer Science elective modules

During your third year of study, you will choose eight of the following elective modules:

| Semester | Module | Language |
|--|---------------------------------------|----------|
| Semester 6 | Advanced Software Engineering 2 | DE |
| | Artificial Intelligence 2 | EN |
| | Cloud Computing 2 | EN |
| | Communication Networks and Services 2 | EN |
| | DoNet Technologie und Frameworks 2 | DE |
| | Information Engineering 2 | DE |
| | Internet of Things 2 | EN |
| | Microcomputer Systems 2 | DE |
| | Mobile Applications 2 | DE |
| | Software and System Security 2 | EN |
| | Visual Computing 2 | DE |
| | Digital Signal Processing 1 | DE |
| Functional Programming | DE | |
| Game Development | DE | |
| Multicore and Parallel Computing | EN | |
| Optimization Methods in Compute | DE | |
| Robotic Applications Programming | EN | |
| Semester 5 | Advanced Software Engineering 1 | DE |
| | Artificial Intelligence 1 | EN |
| | Cloud Computing 1 | EN |
| | Communication Networks and Services 1 | EN |
| | Digital Image Processing 1 | EN |
| | DotNet Technologie und Frameworks 1 | DE |
| | Information Engineering 1 | DE |
| | Internet of Things 1 | EN |
| | Microcomputer Systems 1 | DE |
| | Mobile Applications 1 | DE |
| | Software and System Security 1 | EN |
| | Visual Computing 1 | DE |
| Introduction to Quantum Informatics | DE | |
| Embedded Software Engineering | DE | |
| Cryptography | DE | |
| Natural User Interfaces | DE | |
| Operations Research | DE | |
| Programming Languages | DE | |
| Scientific Computing | EN | |
| Serverless and Cloud Application Development | EN | |
| System on Chip Design | EN | |

You have the opportunity to specialise by choosing from the elective modules, for example in the following areas:

- IT Security and Artificial Intelligence
- Software Engineering
- Information Engineering and Data Science
- Natural User Interfaces
- Cloud Computing and Applications
- Embedded Computing
- Internet of Things
- Communication Systems

It is also possible to establish an individual profile. The range of elective modules is constantly being revised and updated.