

Only the german version of the module description as part of the study regulations is legally binding.

Module name	Computer architecture and hardware laboratory
Module number	INF-25-Ba-RA
Responsible lecturer	Dr. Robert Schöne robert.schoene@tu-dresden.de
Qualification objectives	Students have basic knowledge of the structure and functioning of information processing systems and the implementation of simple analog and digital circuits. They have a balanced theoretical and methodological understanding of the structure and organization of computers and their basic components, including an understanding of complex computer systems, the use of parallelism and performance evaluation.
Content	The module covers the structure and analysis of simple analog and digital circuits, such as RC circuits, combinatorial circuits and flip-flops, sequential and automatic circuits and the Von Neumann architecture. The module also covers the structure and function of the individual components of a computer structure, their organization and their interaction. This includes the representation, coding and processing of information, the realization of switching networks and switching units at gate level, the instruction set as a link to the software and the components of a computer such as control unit, arithmetic unit, register and memory, the various types of parallelism, networking and performance evaluations of complex computing systems.
Teaching and learning methods	The module comprises lectures of 3 SWS, exercises of 2 SWS, practicals of 2 SWS and self-study. The language of instruction for the lectures, exercises and practicals is German.
Prerequisites for participation	In the Diploma degree program in Computer Science and in the Bachelor degree program in Computer Science, the competences to be acquired in the module INF-25-Ba-GTI Fundamentals of Computer Engineering are a prerequisite.
Applicability	The module is a compulsory module in the Diploma degree program in Computer Science. The module is a compulsory module in the Bachelor's degree course in Computer Science. The module creates the prerequisites for the modules listed under prerequisites for participation.
Requirements for earning credit points	The credit points are earned if the module examination is passed. The module examination consists of a written examination lasting 120 minutes and a portfolio of 60 hours. A bonus achievement to the written examination is the completion of 12 hours of exercises. Both examinations are relevant for passing the course. The examination language for the written examination and the portfolio is German.
Credit points and grades	9 credit points can be earned through the module. The module grade is calculated from the weighted average of the grades of the individual examinations. The written examination is weighted twice and the portfolio is weighted once.

Module frequency	The module is offered every summer semester.
Workload	The total workload is 270 hours.
Module duration	The module comprises one semester.