

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

Module name	Fundamentals of computer engineering
Module number	INF-25-Ba-GTI
Responsible lecturer	Prof. Dr. Jerónimo Castrillon jeronimo.castrillon@tu-dresden.de
Qualification objectives	Students understand the basic principles and know the most important methods of analyzing electronic circuits. They know the basic technologies for the realization of simple transistor circuits and their mode of operation. They master basic methods for analyzing and designing digital circuits at gate level. With the help of the fundamentals of technical informatics, students are familiar with the main components of classic computer architectures.
Content	The module covers basic knowledge of the basic functions and physical operation of electrical components such as resistors, capacitors, diodes and transistors. This includes basic methods for circuit analysis, which can be used to derive the function of simple circuits. Building on the basic understanding of semiconductor electronics and the fundamentals of semiconductor circuit technology, further content includes the analysis of digital circuits at transistor level. Specific topics of the basic structure of the basic components of computers are basic circuits for logic elements, switching networks, memory elements, switching units, memories and control units. Further content includes the basics of circuit algebra and methods for the representation and minimization of Boolean functions as well as the analysis, synthesis and optimization of switching networks and switching units.
Teaching and learning methods	The module comprises lectures of 2 SWS, exercises of 2 SWS and the self-studium. The language of instruction for the lectures and exercises is German.
Prerequisites for participation	Knowledge of physics at basic A-level is required.
Applicability	The module is a compulsory module in the Diploma degree program in Computer Science in the foundation course. The module is a compulsory module in the Bachelor's degree course in Computer Science and in the Bachelor's degree course in Applied Computer Science. The module creates the prerequisites for the modules that name it 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. The examination language is German.
Credit points and grades	5 credit points can be earned through the module. The module grade corresponds to the grade of the examination.

Module frequency	The module is offered every winter semester.
Workload	The total workload is 150 hours.
Module duration	The module comprises one semester.