

Module Name	Computer Aided Circuit Design
Module Number	Eul-ET-C-RgSKE
Responsible Lecturer	Prof. Dr.-Ing. habil. Christian Georg Mayr christian.mayr@tu-dresden.de
Qualification Objectives	After completing the module, students master the systematic development of the datapath – register-transfer description – and the control unit – FSM – from the data dependency graph. They are also familiar with the implementation flow, which includes both the automated synthesis of complex blocks and manually optimized digital datapath elements. Furthermore, students master the methodology of computer-aided layout design.
Contents	The module covers circuit design with fundamentals and methods for developing application-specific digital integrated circuits (ASICs), as well as the implementation and functional verification – simulation – of the ASIC up to the netlist of a complete gate-level circuit. Another topic is layout design, including the design methodology and a detailed presentation of the steps in computer-aided layout design, starting from the netlist to the layout representation of an electronic assembly such as circuits, MCMs, or printed circuit boards.
Teaching and Learning Forms	4 hours per week of lectures, 1 hour per week of exercises, 1 hour per week of projects, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Basics of Electrical Engineering and Electronic Systems Design are required.
Usability	The module is a compulsory module of the main study program in the field of Microelectronics in the diploma program Electrical Engineering. It creates the prerequisites for the modules that list this module in the field "Prerequisites for Participation."
Prerequisites for the Award of Credit Points	Credit points are awarded when the module examination is passed. The module examination consists of a complex assignment with a workload of 40 hours and a non-public oral group examination lasting 20 minutes per person. Both examination components are required to pass.
Credit Points and Grades	7 credit points can be earned through the module. The module grade is determined by the weighted average of the grades of the examination components. The complex assignment is weighted twice, and the oral examination is weighted once.
Frequency of the Module	The module is offered every summer semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.