

Module Name	Circuit Design Advanced
Module Number	Eul-ET-C-STV, Eul-BMT-E-STV
Responsible Lecturer	Prof. Dr. sc. techn. habil. Frank Ellinger frank.ellinger@tu-dresden.de
Qualification Objectives	After completing the module, students have deepened their knowledge in the field of semiconductor circuit design and mastered the practical implementation of analog and digital circuits. Students are able to apply their theoretical knowledge in practice, measure circuit parameters, and evaluate these in comparison to theoretical designs.
Contents	The module covers amplifier concepts, including bandwidth enhancement considering the Miller effect; multistage amplifiers, such as cascode amplifiers; power amplifiers; current sources; current mirrors; and circuits for DC power supply. Examples of chip implementations are presented. It also includes hardware-based setups and measurements of electronic circuits, such as feedback circuits, basic amplifier circuits, power amplifiers, operational amplifiers, voltage supply circuits, basic digital circuits, flip-flop circuits, and automata.
Teaching and Learning Forms	1 hour per week of lectures, 1 hour per week of exercises, 2 hours per week of practical lab courses, and self-study.
Prerequisites for Participation	The competencies to be acquired in the module Circuit Design are required.
Usability	The module is a compulsory module in the main study program of the Automation and Robotics specialization in the diploma program Electrical Engineering. Furthermore, it is one of three elective modules in the specialization Electrical Power Engineering in the diploma program Electrical Engineering, of which one must be chosen. Additionally, it is an elective module in the elective area Biomedical Engineering Specialization according to §6 paragraph 3 SO and §33 paragraph 3 PO of the main study program in the diploma program Biomedical 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 written exam lasting 60 minutes and a complex assignment with a workload of 63 hours. Both examination components are mandatory for passing.
Credit Points and Grades	5 credit points can be earned through the module. The module grade is determined by the unweighted average of the grades of the examination components.
Frequency of the Module	The module is offered every winter semester.
Workload	The total workload is 150 hours.
Duration of the Module	The module lasts one semester.