

Module Name	Control Engineering Advanced
Module Number	Eul-ET-E-RTV, Eul-IST-E-RTV, Eul-MT-E-RTV
Responsible Lecturer	Prof. Dr.-Ing. habil. Klaus Röbenack klaus.roebenack@tu-dresden.de
Qualification Objectives	After completing the module, students master advanced criteria and methods for stability analysis and controller design for linear time-continuous systems. Furthermore, students are capable of designing controllers for linear systems that are robust against uncertainties.
Contents	The module covers the Routh algorithm for stability analysis, the Strecker-Nyquist criterion for unstable control loops, advanced control concepts such as IMC controllers or Smith predictors, as well as robust control.
Teaching and Learning Forms	2 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	In the diploma program in Electrical Engineering, the competencies to be acquired in the module "Control Engineering" are required. In the diploma programs in Information Systems Engineering and Mechatronics, the competencies to be acquired in the module "Control Engineering Basics" are required.
Usability	The module is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 of the Study Regulations (SO) and § 33 paragraph 4 of the Examination Regulations (PO) of the main study program in the specialization Automation Technology and Robotics in the diploma program Electrical Engineering. Furthermore, it is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 SO and § 33 paragraph 3 PO of the main study program in the field of Automation, Sensors, and Robotics in the diploma program Information Systems Engineering. Additionally, it is an elective module in the elective area "Methods and Applications" according to § 6 paragraph 3 SO and § 33 paragraph 3 PO of the main study program in the diploma program Mechatronics. 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 120 minutes.
Credit Points and Grades	5 credit points can be earned through the module. The module grade corresponds to the grade of the examination performance.
Frequency of the Module	The module is offered every summer semester.
Workload	The total workload is 150 hours.
Duration of the Module	The module lasts one semester.