

Module Name	Nonlinear Control Engineering Advanced
Module Number	Eul-ET-E-NLRV, Eul-IST-E-NLRV, Eul-MT-E-NLRV
Responsible Lecturer	Prof. Dr.-Ing. habil. Klaus Röbenack klaus.roebenack@tu-dresden.de
Qualification Objectives	After completing the module, students are familiar with methods for describing selected classes of complex nonlinear and linear single- and multi-variable systems. They are able to design controllers, regulators, and observers for selected classes of complex nonlinear and linear single- and multi-variable systems.
Contents	The module covers mathematical tools for describing selected classes of complex nonlinear and linear single- and multi-variable systems, such as differential geometry and partial differential equations. It also includes the design of controllers, regulators, and observers for selected classes of complex nonlinear and linear systems, such as flat or distributed parameter systems.
Teaching and Learning Forms	4 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	In the diploma program Electrical Engineering, the competencies to be acquired in the module Nonlinear Control Engineering are required. In the diploma programs Information Systems Engineering and Mechatronics, the knowledge to be acquired in the module Nonlinear Control Engineering Basics is required.
Usability	The module is an elective module in the elective area "Competence Deepening" according to § 6 paragraph 3 SO and § 33 paragraph 4 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	7 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 winter semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.