

Module Name	Lab Simulation Technology and Control Engineering
Module Number	Eul-ET-C-PrSSR
Responsible Lecturer	Prof. Dr.-Ing. habil. Klaus Röbenack klaus.roebenack@tu-dresden.de
Qualification Objectives	After completing the module, students master the use of numerical integration algorithms for the simulation of ODE and DAE models. They are familiar with the basic structure of industrial control technology and can implement their own control designs on industrial control platforms. They are capable of designing single- and multi-loop controllers for linear and nonlinear systems, implementing them on practical systems, testing them, and evaluating their performance. Additionally, they possess extensive skills and experience in analyzing and presenting simulation, experimental, and measurement results.
Contents	The module covers: • Modular simulation of ODE, DAE, and hybrid equation systems • Applied control design and practical use of industrial control technology • Applied controller design for linear and nonlinear systems • Implementation and evaluation of these designs on specific example systems at a laboratory scale
Teaching and Learning Forms	4 hours per week of practical lab courses, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Systems Theory and Automation Engineering are required.
Usability	The module is a compulsory module of the main study program in the field of Automation and Robotics 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 performance task with a workload of 30 hours.
Credit Points and Grades	4 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 academic year, starting in the winter semester.
Workload	The total workload is 120 hours.
Duration of the Module	The module lasts two semesters.