

Module Name	Control of Robotic Manipulators
Module Number	Eul-ET-E-StMan, Eul-IST-E-StMan, Eul-MT-E-StMan
Responsible Lecturer	Prof. Dr. techn. Klaus Janschek klaus.janschek@tu-dresden.de
Qualification Objectives	After completing the module, students are able to apply controlled industrial robot systems. They master the theoretical and computer-aided handling of behavioral models and algorithms for controlling industrial robot systems, such as manipulators with serial kinematics. Students are capable of solving a manageable design task as a small project using the methods they have learned.
Contents	The module covers the control of serial manipulators with a focus on kinematic fundamentals, velocity kinematics, trajectories, robot dynamics, position control, and force control.
Teaching and Learning Forms	2 hours per week of lectures, 1 hour per week of exercises, 1 hour per week of practical lab courses, and self-study.
Prerequisites for Participation	In the diploma program Electrical Engineering, the competencies to be acquired in the module Control Engineering are required. In the diploma programs Information Systems Engineering and Mechatronics, the knowledge to be acquired in the module 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. A bonus performance for the written exam is a practical performance review with a scope of 15 hours.
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.