

Module Name	Robotics
Module Number	Eul-MT-E-A08V
Responsible Lecturer	Prof. Hans Christian Schmale hans_christian.schmale@tu-dresden.de
Qualification Objectives	After completing the module, students are familiar with the application of industrial robots in the field of manufacturing laser applications. Students are able to program robots for manufacturing tasks, particularly for laser applications, and are familiar with the possibilities of online and offline programming.
Contents	The module covers the control of mobile robots with a focus on kinematic fundamentals, navigation, and path planning. It also includes laser technology and its application using industrial robots, as well as the challenges of controlling laser processes. Additional topics include types of robot programming and their practical application, the use of additional axes, multi-robot systems, and coupled beam deflection systems, as well as an overview of sensor applications in industrial robots.
Teaching and Learning Forms	3 hours per week of lectures, 2 hours 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 modules Materials, Technical Mechanics, Fundamentals of Kinematics and Kinetics, Numerical Methods, and System Dynamics of Mechanical Structures are required.
Usability	The module is an elective module from 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 and a portfolio with a workload of 1.5 hours.
Credit Points and Grades	7 credit points can be earned through the module. The module grade is determined by the weighted average of the grades of the examination components. The written exam is weighted fourfold, and the portfolio is weighted threefold.
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.