

Module Name	Computer-Aided Electronics Manufacturing
Module Number	Eul-ET-E-RgEF
Responsible Lecturer	Prof. Dr.-Ing. Juliana Panchenko juliana.panchenko@tu-dresden.de
Qualification Objectives	After completing the module, students have the competence to apply and evaluate methods for the scientific analysis and optimization of production processes and workflows. They apply statistical methods for the optimal design of manufacturing workflows and for product quality assurance.
Contents	The module content includes production control and planning, covering the fundamentals of production control and planning, key figures and analytical models for describing manufacturing systems and processes, classification of manufacturing systems, and analysis of selected special cases. It also includes performance evaluation of manufacturing systems, planning and control of manufacturing workflows, event-discrete models, and simulation of manufacturing systems. Additionally, methods for optimizing manufacturing processes and the application of production control and planning in industry are covered. The module also includes statistical methods, focusing on the fundamentals and application of statistical methods, particularly for analyzing quality data using regression and variance analyses, statistical experimental design (Design of Experiments, DoE), application of Taguchi methods, analysis of reliability data, and measurement system evaluation.
Teaching and Learning Forms	4 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Introduction to Analysis and Algebra, Complex Function Theory, Partial Differential Equations, Probability Theory, and Quality Assurance are required.
Usability	The module is an elective module from the elective area "Competence Deepening" according to § 6 paragraph 3 SO and § 33 paragraph 4 PO of the main study program in the field of Device, Micro, and Medical Technology 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 written exam lasting 180 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 summer semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.