

Module Name	Design Methodologies/CAD
Module Number	Eul-MT-C-KLCAD, Eul-RES-E-KLCAD
Responsible Lecturer	Prof. Dr.-Ing. Kristin Paetzold-Byhain kristin.paetzold@tu-dresden.de
Qualification Objectives	After completing the module, students are proficient in creating standard-compliant drawings, presenting them, and using them as a means of communication. They can identify relationships within the presented content and evaluate them from a design perspective. Students are enabled to address subject-specific questions considering manufacturing and design methodological approaches. They can apply methods to derive CAD models from design approaches, as well as analyze, critically assess, and evaluate existing CAD models. Students are capable of practically applying CAD systems in the context of knowledge-based design. They are able to methodically and consistently apply learned approaches to design, transfer them to various tasks, and evaluate given design solutions.
Contents	The module covers the fundamentals of designing and developing technical products within the context of design, manufacturing, and quality assurance. It also includes the creation of technical drawings in compliance with standards, tolerance management, necessity, and procedures. Further contents include the application and use of 3D CAD systems for geometry creation and representation, such as individual parts/assemblies/drawings, parametric modeling, and design planning. This also encompasses strategies for assembly modeling, such as top-down and bottom-up approaches, as well as knowledge-based design.
Teaching and Learning Forms	2 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the Introduction to Analysis and Algebra, Multidimensional Differential and Integral Calculus, Physics, Basics of Electrical Engineering, Materials, Engineering Mechanics, and Electronic Systems Design are required.
Usability	The module is a compulsory module in the main study program of the diploma program Mechatronics and an elective module in the elective area Orientation according to § 6 paragraph 3 SO and § 33 paragraph 3 PO of the main study program in the diploma program Regenerative Energy Systems. 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 150 minutes and a term paper requiring 40 hours of work. The written exam is mandatory for passing.
Credit Points and Grades	5 credit points can be earned through the module. The module grade is determined by the weighted average of the grades of the two examination components. The written exam is weighted three times, and the term paper is weighted once.
Frequency of the Module	The module is offered every winter semester.
Workload	The total workload is 150 hours.
Duration of the Module	The module lasts one semester.