Module name	**Design Methodologies**
Module number	EuI-MT-C-Konst, EuI-RES-C-Konst
Lecturer in charge	Prof. Dr.-Ing. Berthold Schlecht berthold.schlecht@tu-dresden.de
Objectives	After completing the module, students will be familiar with the mechanical engineering fundamentals for the work of a mechanical engineer in development, design, research, production, quality assurance, testing and planning. They will be able to apply the basics of calculating the load-bearing capacity of simple components such as axles and shafts, shaft-hub connections, rolling bearings and gear drives. They will be able to assess the suitability of typical machine elements for use in all specialist areas, select them, design them in combination and calculate them using modern tools.
Contents	The contents of the module are the function and structure of individual machine elements as well as generally valid basic knowledge for their calculation and design, in particular the basics of the corresponding methods for dimensioning or recalculation of components or assemblies, for example shafts and axles, rolling bearings and gear drives, taking into account the modern state of the art.
Modes of teaching and learning	2 hours per week lectures, 2 hours per week exercises and self-study.
Prerequisites	The skills to be acquired in the module **Introduction to Analysis and Algebra, Calculus for Functions with Several Variables, Physics, Basics of Electrical Engineering, Materials Science**, **Engineering Mechanics** and **Electronic Systems Design** are required.
Usability	The module is a compulsory module in the basic studies of the degree programmes Mechatronics and Renewable Energy Systems. It creates the prerequisites for the modules that list that module in the "Prerequisites" field.
Requirements for the award of credit points	The credit points are awarded when the module assessment is passed. The module assessment consists of a written exam of 180 minutes and a term paper of 30 hours. The written exam has to be passed.
Credit points and grades	5 credit points can be obtained by the module. The module grade is the weighted mean of the grades of the assessments. The written exam is weighted by 4/5 and the complex assignment 1/5.
Frequency	The module is offered every winter semester.
Workload	The total effort is 150 hours.
Duration	The module takes one semester.