

Module Name	Design Materials for Mechatronics Engineers
Module Number	Eul-MT-E-M03G1
Responsible Lecturer	Dr. Birgit Vetter birgit.vetter@tu-dresden.de
Qualification Objectives	Students are familiar with the most important properties of selected metallic construction materials, such as wrought and cast alloys, and the possibilities of influencing these properties through chemical composition and various heat treatment processes. They understand the microstructure-property relationships of ferrous and non-ferrous materials and can link these to manufacturing conditions. Based on this knowledge, students are able to derive recommendations for the appropriate use of selected metallic construction materials.
Contents	The module covers the behavior of metallic construction materials under, for example, quasi-static and cyclic loading, at high temperatures, and in aggressive environments. It also includes the requirements for the property profile of ferrous and non-ferrous materials with regard to processing and application. Furthermore, it is demonstrated how these requirements can be met through manufacturing and alloying techniques.
Teaching and Learning Forms	2 hours per week of lectures, 2 hours per week of practical lab courses, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Physics, Materials, Engineering Mechanics, Design Methodologies, and Manufacturing Engineering 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. A bonus performance for the written exam is a performance review with a total duration of 6 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.