

Module name	Materials Science
Module number	Eul-ET-C-Wrkst, Eul-BMT-C-Wrkst, Eul-MT-C-Wrkst, Eul-RES-C-Wrkst
Lecturer in charge	Dr.-Ing. Stefan Enghardt stefan.enghardt@tu-dresden.de
Objectives	After completing the module, students will be able to establish a connection between the microscopic structure, the macroscopic properties and the practical application aspects of the materials. They know the theoretical basics of atomic structure, types of bonding, crystal structure, real structure and microstructure and have knowledge of materials testing.
Contents	The module covers the following areas: Overview of materials and practical examples, fundamentals of materials science, state diagrams and alloys, conductor, semiconductor, dielectric and magnetic materials as well as materials testing and diagnostics.
Modes of teaching and learning	2 hours per week lectures, 1 hour per week exercises and self-study.
Prerequisites	Knowledge of mathematics and physics at basic A-level is required. The following literature, for example, can also be used for preparation: <ul style="list-style-type: none"> - Elemente der Mathematik SII, Westermann Verlag, - Lambacher Schweizer Mathematik Oberstufe, Klett Verlag, - Bigalke/Köhler Mathematik, Cornelsen Verlag, - Lehrbuch Physik Gymnasiale Oberstufe, Duden Verlag, - Metzler Physik SII, Westermann Verlag, - Dorn/Bader Physik SII, Westermann Verlag.
Usability	The module is a compulsory module in the basic studies of the degree programmes Electrical Engineering, Biomedical Engineering, 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 90 minutes.
Credit points and grades	3 credit points can be obtained by the module. The module grade is the grade of the examination.
Frequency	The module is offered every winter semester.
Workload	The total effort is 90 hours.
Duration	The module takes one semester.