

Module Name	Materials Science, Semiconductor and Microsystems Technology Lab
Module Number	Eul-ET-C-PrWHM
Responsible Lecturer	Prof. Dr.-Ing. Andreas Richter andreas.richter7@tu-dresden.de
Qualification Objectives	After completing the module, students possess practical fundamental knowledge of the characterization and properties of materials used in semiconductor and microsystems technology, as well as the associated technologies and methods. They are able to purposefully select processes for microtechnical applications, determine their functional parameters, and apply the corresponding technologies, processes, and system configurations.
Contents	The module covers fundamental practical knowledge in: - Characterization of materials used in semiconductor and microsystems technology, including the methods and apparatus employed, such as scanning electron microscopy, metallography, surface characterization, and characterization of smart materials. - Key processes for the production of integrated microelectronic circuits, including PVD/ALD, CVD, photolithography, and RIE. - Simulation, design, and characterization of micromechanical actuators, microtransponder technology, and microfluidic systems.
Teaching and Learning Forms	3 hours per week of practical sessions and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules "Materials", Microelectronic Technologies and Components" and "Materials and Semiconductor Technology" are required.
Usability	The module is a compulsory module of the main study program in the field of Microelectronics 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 portfolio with a workload of 30 hours.
Credit Points and Grades	3 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 90 hours.
Duration of the Module	The module lasts one semester.