Module Name	Hybrid Integration
Module Number	EuI-ET-E-Hybri, EuI-IST-E-Hybri
Responsible Lecturer	Prof. Dr.-Ing. Juliana Panchenko juliana.panchenko@tu-dresden.de
Qualification Objectives	After completing the module, students possess competencies in thin- and thick-film technologies, hybrid technology, as well as assembly and interconnection technology (i.e., packaging) of such assemblies. Students are familiar with micro- and nano-integration and are capable of solving innovative tasks in assembly and interconnection technology. They are able to evaluate and select appropriate technologies.
Contents	The module covers hybrid technology and its associated technologies, particularly thin- and thick-film technologies, substrate materials and pastes, thermal processes, single- and multi-layer techniques, design rules, and the implementation of assemblies. It also includes hybridization, components, housings, laser material processing, printing, firing, and trimming, as well as interconnection techniques (contacting), functional testing, and protection of assemblies. Furthermore, the module addresses system integration technologies, including micro- and nano-integration of electronic components on silicon wafers, 3D and 2.5D system integration, processes for manufacturing vertical silicon through-vias (TSV), fine redistribution layers, and technologies for bumping, bonding, and stacking.
Teaching and Learning Forms	4 hours per week of lectures, 1 hour per week of practical lab courses, 3 days of excursions (8 hours per day), and self-study. The language of instruction for the lectures may be German or English and will be determined by the lecturer at the beginning of the semester and announced in the usual manner.
Prerequisites for Participation	The competencies to be acquired in the module "Microelectronic Technologies and Components" are required.
Usability	The module is an elective module in the fields of Device, Micro-, and Medical Technology as well as Microelectronics in the diploma program Electrical Engineering. It is also an elective module in the field of Microelectronics in the study program Information Systems Engineering.
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 complex assignment with a workload of 12 hours.
Credit Points and Grades	7 credit points can be earned through the module. The module grade is determined by the weighted average of the grades of the examination components. The written exam is weighted twice, and the complex assignment is weighted once.
Frequency of the Module	The module is offered every winter semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.