

Module Name	Nondestructive Testing
Module Number	Eul-ET-E-ZfP
Responsible Lecturer	PD Dr.-Ing. habil. Martin Oppermann martin.oppermann@tu-dresden.de
Qualification Objectives	After completing the module, students possess specialized knowledge and competencies regarding the function, structure, and application of non-destructive testing techniques, primarily for the characterization of electronic assemblies.
Contents	The module covers non-destructive testing of electronic assemblies using imaging techniques, method evaluation, storage of digital images, image preprocessing, image segmentation, feature extraction, and classification, as well as considerations for quality cost optimization. It also includes micro- and nano-non-destructive testing using acoustic methods, imaging scanning probe techniques, X-ray techniques, magnetic methods, methods for integrated structural and condition monitoring (SHM), ultrasonic-based sensor systems, optical fiber systems, high-resolution analytical methods, as well as material testing and structural monitoring.
Teaching and Learning Forms	4 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 Measurement Technology and Technologies of Electronics are required.
Usability	The module is an elective module from the elective area "Competence Deepening" according to § 6 Paragraph 3 SO and § 33 Paragraph 4 PO of the main study program in the specialization Devices, Micro-, and Medical Technology 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 written exam lasting 180 minutes and a complex assignment with a scope of 12 hours. Both examination components are relevant for passing.
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.