Module Name	Specific Production Methods Advanced
Module Number	EuI-MT-E-A09V
Responsible Lecturer	Prof. Dr. A. Lasagni andres_fabian.lasagni@tu-dresden.de
Qualification Objectives	After completing the module, students understand the material science and technological fundamentals, requirements, and characterization possibilities of nanotechnology and are familiar with its potential in various application areas. Students are knowledgeable about the possibilities of precise material processing using laser technology and gain an overview of methods for micro- and nanostructured surface processing. They know how to prepare, execute, and characterize laser processes for the structured processing of different materials. Students also gain practical experience with special manufacturing methods.
Contents	The module contents include material science and technological fundamentals as well as characterization possibilities of nanotechnology and its diverse application areas. The methods of laser-based micro- and nanostructuring of various materials are taught theoretically, demonstrated practically, and tested. Interdisciplinary practical sessions cover the fundamentals, advanced topics, and analysis possibilities of special manufacturing methods.
Teaching and Learning Forms	3 hours per week of lectures, 2 hours per week of exercises, 1 hour per week of practical lab courses, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Physics and Specific Production Methods Advanced Basics 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 150 minutes and a portfolio with a workload of 20 hours.
Credit Points and Grades	7 credit points can be earned through the module. The module grade is calculated as the weighted average of the grades of the individual examination components. The portfolio is weighted once, and the written exam is weighted four times.
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.