

Module Name	Automotive Electronics and Diagnosis
Module Number	Eul-MT-E-A03A4
Responsible Lecturer	Prof. Dr.-Ing. Bernard Bäker LV_FE@tu-dresden.de
Qualification Objectives	Students are able to design and evaluate mechatronic systems and functions in the vehicle context. Furthermore, they are capable of analyzing, assessing, and designing networked vehicle systems and their communication structures. They can also design electrical and mechatronic vehicle systems to be diagnosable and apply algorithms for fault detection and fault classification.
Contents	The module covers the structure, function, and interrelationships of electronic and networked mechatronic systems in vehicles, energy supply and distribution, data processing, and digital control loops. Additional topics include diagnostic methods for on-board and off-board applications, as well as communication protocols for diagnosing mechatronic system functions.
Teaching and Learning Forms	3 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 Physics, Basics of Electrical Engineering, and Measurement Technology are required.
Usability	The module is an elective module within 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. The module cannot be selected if the module "Mechatronic Systems and the Operation of CO ₂ -Neutral Combustion Engines" has already been chosen. 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: - For more than 20 registered students: a written exam lasting 120 minutes and an ungraded portfolio with a workload of 30 hours. - For up to 20 registered students: a non-public oral group examination lasting 20 minutes and an ungraded portfolio with a workload of 30 hours. Students will be informed of the applicable examination format at the end of the registration period in the usual manner.
Credit Points and Grades	5 credit points can be earned through the module. The module grade is determined in accordance with § 15 paragraph 1 sentences 5 and 6 of the examination regulations, based on the unweighted average of the grades of the individual examination components.
Frequency of the Module	The module is offered annually, starting in the summer semester.
Workload	The total workload is 150 hours.

Duration of the Module	The module lasts two semesters.
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