Module Name	Rail Vehicles Simulation
Module Number	EuI-MT-E-A02V
Responsible Lecturer	Dr.-Ing. V. Quarz volker.quarz@tu-dresden.de
Qualification Objectives	After completing the module, students understand the system structure of a rail vehicle, are familiar with the structure and function of the electric vehicle drive and its main components. Students are aware of the interactions between electric vehicles and energy supply systems as well as the control and regulation technology of subsystems and the overall system. They are capable of designing and calculating subsystems. Furthermore, they know and understand the fundamentals of modeling using the multibody system method and the basics of system simulation for vehicles or vehicle components.
Contents	The module covers the design, construction, manufacturing, and maintenance of subsystems such as electric drives, as well as the fundamentals of the multibody system method and system simulation.
Teaching and Learning Forms	3 hours per week of lectures, 1 hour per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Materials, Technical Mechanics, Fundamentals of Kinematics and Kinetics, Multidimensional Differential and Integral Calculus, Automation Engineering, Measurement Technology, Control Engineering Basics, Discrete Event Systems and Control, Software Engineering Advanced, and Embedded Controllers 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 90 minutes.
Credit Points and Grades	7 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 winter semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.