

Module Name	Electric Traction Motors
Module Number	Eul-MT-E-M08
Responsible Lecturer	Prof. Dr.-Ing. Matthias Centner matthias.centner@tu-dresden.de
Qualification Objectives	Students acquire knowledge and skills in the design and calculation of electric traction motors and their integration into the overall drivetrain system.
Contents	The module covers the design and calculation of electric machines and electric vehicle and traction drives. The main topics include: - Design of key dimensions of electric machines - Winding and magnetic circuit design - Determination and recalculation of machine parameters - Losses, efficiency, heating, cooling concepts - Optimization of components and overall systems - Manufacturing technologies - Traction with a focus on drivetrain and mechanics - Traction motors - Power electronics with a focus on grid converters and machine converters - Motor and train control - Electric and hybrid drivetrains - Synchronous and asynchronous traction motors - Power electronics: inverters, DC/DC converters - Auxiliary drives - Control and regulation - Energy storage and charging technology - Vehicle transmissions
Teaching and Learning Forms	4 hours per week of lectures, 1 hour per week of exercises, 1 hour per week of practical lab courses, and self-study.
Prerequisites for Participation	Knowledge and skills acquired in the modules Electrical Power Engineering and Electrical and Fluid Power Drive Systems are required.
Usability	The module is an elective module in 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 non-public oral examination as an individual examination lasting 45 minutes and a complex assignment with a workload of 30 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 oral examination is weighted sevenfold, and the complex assignment is weighted threefold.
Frequency of the Module	The module is offered every summer semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.