

Module Name	Fluid-Mechatronics in Mobile Applications
Module Number	Eul-MT-E-M02V
Responsible Lecturer	Prof. Dr.-Ing. J. Weber fluidtronik@mailbox.tu-dresden.de
Qualification Objectives	Students are able to select and dimension components and systems for mobile working machines according to their requirements. In addition to the functional design of hydraulic systems, they are capable of evaluating necessary aspects of machine safety and implementing system control using microprocessors.
Contents	The module covers system architectures and components of hydraulic drives and controls in mobile working machines. Methods for requirement-based drive selection and dimensioning are taught. The focus is on working hydraulics systems, drive systems, and steering systems. Due to the increasing prevalence of electrohydraulic systems in mobile machines, the module content also includes control technology, software development, and safety aspects. To apply and deepen the acquired knowledge, practical experiments are conducted on the functional and energetic behavior of typical mobile hydraulic systems as well as on the implementation of control algorithms.
Teaching and Learning Forms	3 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	The competencies to be acquired in the modules Measurement Technology, Control Engineering Basics, and Discrete Event Systems and Control 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 180 minutes and a portfolio with a workload 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 individual examination components. The written exam is weighted fourfold, and the portfolio is weighted singly.
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.