

Module Name	Fluid-Mechatronics in Industrial Applications
Module Number	Eul-MT-E-M02G
Responsible Lecturer	Prof. Dr.-Ing. J. Weber fluidtronik@mailbox.tu-dresden.de
Qualification Objectives	After completing the module, students master the methodological fundamentals for the control and regulation analysis of electrohydraulic and pneumatic drive systems. They are capable of designing the corresponding control loops. Furthermore, they can design sequence controls and implement them in pneumatic circuits.
Contents	The module covers knowledge of system structures and components of modern controlled electrohydraulic drives, which are used, for example, in presses, plastic or machine tools. It also includes the necessary control and regulation concepts, the possibilities for control engineering descriptions, and the methods for designing the corresponding control loops. The module further addresses the structures and components of pneumatic drive systems, which are primarily used for automated handling tasks of industrial goods. Another focus is the design of sequence controls and their implementation in pneumatic circuits. Special attention is given to electropneumatic solutions, including programmable logic controllers (PLCs). Practical experiments on the control and regulation of hydraulic and pneumatic drives serve to deepen and apply the knowledge imparted.
Teaching and Learning Forms	2 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 Measurement Technology, Basic Knowledge of Control Engineering, Event-Discrete Systems and Controls, as well as Electrical and Fluid Drive Systems, 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 scope 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 summer semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.