

Module Name	Multi Body Systems Basics
Module Number	EuI-MT-E-M01G
Responsible Lecturer	Prof. Dr.-Ing. Michael Beitelschmidt dynamik.u.mechanismentechnik@tu-dresden.de
Qualification Objectives	After completing the module, students master the methodological fundamentals for formulating the equations of motion for multibody systems and their computational implementation for simple special cases. Students are familiar with the various algorithms of multibody simulation used in commercial software. Furthermore, they understand the theoretical foundations of elastic multibody systems and can prepare elastic bodies from finite element (FE) models for simulation in multibody system (MBS) programs.
Contents	The module covers the method of multibody simulation to calculate large motions of mechanical systems composed of rigid and elastic bodies in the time domain. It includes the use of elastic bodies as model elements for complex structures.
Teaching and Learning Forms	3 hours per week of lectures, 2 hours per week of exercises, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Multidimensional Differential and Integral Calculus, Materials, and Technical Mechanics, as well as Fundamentals of Kinematics and Kinetics, 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. 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 150 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 summer semester.
Workload	The total workload is 210 hours.
Duration of the Module	The module lasts one semester.