

Module Name	Biomedical Engineering for Mechatronic Engineers Basics
Module Number	Eul-MT-E-A12G
Responsible Lecturer	Prof. Dr.-Ing. H. Malberg lehre.ibmt@tu-dresden.de
Qualification Objectives	After completing the module, students possess basic knowledge of the structure and function of the human body, including selected pathomechanisms that can be diagnosed and treated through the use of medical technology. They also understand the essential characteristics of the interface between the organism and technology, forming the basis for the application of diagnostic and therapeutic technologies. Students are equipped with the prerequisites for interdisciplinary collaboration as engineers in the medical field.
Contents	The module covers: Fundamentals of Physiology and Medicine, including: - Structure and function of cells and organs - Organ systems - Electro- and neurophysiological fundamentals - Cardiovascular system - Autoregulation of the organism - Pathophysiological phenomena - Clinical functional processes Measurement of Physiological Quantities, including: - Measurement of electrical and non-electrical physiological quantities - Medical sensors - Artifacts and interference factors Biomedical Engineering, including: - Cardiovascular diagnostic, monitoring, and therapy systems - Artificial organs and organ support systems - Imaging diagnostic procedures - Surgical techniques and devices
Teaching and Learning Forms	6 hours per week of lectures and self-study.
Prerequisites for Participation	Competencies acquired in the modules Physics, Basics of Electrical Engineering, and Electronic System Design 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 120 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.