

Module Name	Medical and Physiological Principles
Module Number	Eul-ET-E-MedGL
Responsible Lecturer	Prof. Dr.-Ing. habil. Hagen Malberg lehre.ibmt@tu-dresden.de
Qualification Objectives	After completing the module, students are familiar with fundamental life processes and their pathological changes, which can be diagnosed and treated using biomedical technology. Furthermore, they are acquainted with the essential characteristics of various measurement methods for obtaining physiological information. They possess in-depth knowledge of medical terminology, providing the foundation for effective interdisciplinary collaboration as engineers in the medical field.
Contents	The module covers the fundamentals of anatomy, physiology, and pathology for engineers, particularly the structure and function of cells, organs, and organ systems, as well as electro- and neurophysiological principles, the cardiovascular system, autoregulation of the organism, pathophysiological phenomena, clinical functional processes, and an introduction to medical terminology. Additionally, the module teaches the operating principles and technical implementations of devices and procedures in medical diagnostics, such as X-ray diagnostics, CT, PET, SPECT, multimodal data fusion, visualization, and the quality assessment of diagnostic statements as a basis for medical decision-making, therapeutic measures, and clinical workflows.
Teaching and Learning Forms	4 hours per week of lectures, 1 hour per week of seminars, 1 hour per week of practical lab courses, and self-study.
Prerequisites for Participation	The competencies to be acquired in the modules Physics and Biomedical Engineering are required.
Usability	The module is an elective module from the elective area "Competence Deepening" according to § 6 paragraph 3 SO and § 33 paragraph 4 PO of the main study program in the specialization Devices, Micro-, and Medical Technology in the diploma program Electrical Engineering. 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 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 written exam is weighted three times, and the complex assignment is weighted once.
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.