

Module name	Physico-chemical Fundamentals of Biomedical Engineering
Module number	EuI-BMT-C-PCG
Lecturer in charge	PD Dr. rer. medic. habil. Julia Walther julia.walther@tu-dresden.de
Objectives	After completing the module, the students are familiar with the fundamentals of chemistry and physics that are important for medical technology. They know the essential laws of physics and the basics of the mathematical description of physical processes. They have knowledge of the important facts in mechanics, acoustics, thermodynamics and optics. They have a basic knowledge of general, inorganic, organic and analytical chemistry. Further, they have basic chemical knowledge of materials science.
Contents	The contents of the module are the basics of chemistry and physics and its application in biomedical technology. The module includes physical principles of imaging technologies in medicine, optics in the context of optical medical technology, bio-physical control circuits, important classes of substances in physiological and medical chemistry and chemical reaction types.
Modes of teaching and learning	4 hours per week lectures, 3 hours per week seminars and self-study.
Prerequisites	Knowledge of mathematics, chemistry and physics at basic A-level is required. Literature: Axel Zeeck, Sabine Cécile Zeeck, Stephanie Grond: Chemie für Mediziner; Hering, Martin, Stohrer: Physik für Ingenieure.
Usability	The module is a compulsory module in the basic studies of the degree programme Biomedical Engineering. It creates the prerequisites for the modules that list that module in the "Prerequisites" field.
Requirements for the award of credit points	The credit points are awarded when the module assessment is passed. The module assessment consists of a written exam of 120 minutes.
Credit points and grades	9 credit points can be obtained by the module. The module grade is the grade of the examination.
Frequency	The module is offered every academic year beginning in the winter semester.
Workload	The total effort is 270 hours.
Duration	The module takes two semesters.