

Module name	Autonomous and Cooperative Systems in Biomedical Technology
Module number	Eul-BMT-C-AKSM
Lecturer in charge	Prof. Dr.-Ing. habil. Hagen Malberg Lehre.IBMT@tu-dresden.de
Objectives	After completing the module, students will have knowledge, skills and abilities in dealing with autonomous and cooperative systems in medicine. They know the functional principles and methodological tools for developing such systems.
Contents	The contents of the module are networked and intelligent implants, including introduction to implant technology, functional implants, getting to know integrated sensor technology and clinical applications, generalization of measurement, automation and analysis tasks, structure and design of intelligent and networked implants, including energy supply, biocompatible assembly and connection technology, interfaces, cardiac assistance systems, including therapy concept, functionality, pacemaker codes, assembly and application of pacemakers and defibrillators, frequency-adaptive systems, telemonitoring, safety, biomechanical systems in rehabilitation, including introduction to posture and movement analysis, biomechanical systems in rehabilitation, including introduction to posture and movement analysis, biomechanical measurement methods, instrumental gait analysis, therapy concepts for prostheses, orthoses and exoskeletons.
Modes of teaching and learning	4 hours per week lectures, 1 hour per week seminars, 1 hour per week practical lab courses and self-study.
Prerequisites	The knowledge acquired in the modules Physico-chemical Fundamentals of Biomedical Engineering and Fundamentals of Biomedical Engineering are required.
Usability	The module is a compulsory module in the main 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 90 minutes and a complex assignment of 30 hours. Both exam and complex assignment have to be passed.
Credit points and grades	7 credit points can be obtained by the module. The module grade is the weighted mean of the grades of the assessments. The written exam is weighted by 3/4 and the complex exam is weighted by 1/4.
Frequency	The module is offered every winter semester.
Workload	The total effort is 210 hours.

Duration	The module takes one semester.
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