Module Name	Haptics in Medical Technology - Surgery, Therapy and Care
Module Number	EuI-BMT-E-HAPMT
Responsible Lecturer	Prof. Dr.-Ing. habil. Ercan Altinsoy ercan.altinsoy@tu-dresden.de
Qualification Objectives	Students are familiar with and understand the technological foundations, basic principles, and technical terminology of haptics. The focus is on the functionality of haptic devices and haptic perception. They acquire the competence to design haptic sensors, actuators, and systems, as well as to develop and apply haptic devices for surgery, therapy, and care. Specifically, students gain knowledge in the areas of kinesthetic feedback, tactile feedback, haptic sensing, haptic actuation, development and integration of haptic systems, anatomy, physiology, and disorders of the haptic system, the influence of touch on development, stress, pain, sleep, the immune system, and various medical conditions, haptic stimulation, and haptic rehabilitation. They are capable of understanding problems in the application area and developing solutions.
Contents	The module covers electrical drives, actuator design, the functionality of force and position sensors, software design, control of haptic systems, physiology of the haptic system, and haptic perception for the development of haptic actuators, sensors, and systems used in medical surgery, medical robotics, and medical care.
Teaching and Learning Forms	2 hours per week of lectures, 1 hour per week of practical lab courses, and self-study.
Prerequisites for Participation	No prior knowledge is required.
Usability	The module is an elective module within the elective area "Biomedical Technical Specialization" according to § 6 Paragraph 3 SO and § 33 Paragraph 3 PO of the main study program in the diploma program Biomedical Engineering.
Prerequisites for the Award of Credit Points	Credit points are awarded when the module examination is passed. The module examination consists of a non-public oral examination as an individual assessment lasting 30 minutes.
Credit Points and Grades	5 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 winter semester.
Workload	The total workload is 150 hours.
Duration of the Module	The module lasts one semester.