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| <b>Module Name</b>                                  | <b>Acoustics in Medical Engineering – Audiology, Hearing Aids, Diagnosis, and Therapy</b>                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Module Number</b>                                | Eul-BMT-E-AKUMT                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Responsible Lecturer</b>                         | Prof. Dr.-Ing. habil. Ercan Altinsoy<br>ercan.altinsoy@tu-dresden.de                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Qualification Objectives</b>                     | Students are familiar with and understand the physical principles, basic concepts, and technical terminology of acoustics. They acquire competencies in applying methods for examining the functionality of the auditory system, as well as in designing and dimensioning hearing aids and cochlear implants in a user-friendly manner from an acoustic perspective. They are capable of comprehending problems in the field of application and developing solutions. |
| <b>Contents</b>                                     | The module covers physical acoustics, hearing acoustics/psychoacoustics (e.g., physiology of the outer, middle, and inner ear, processing of acoustic signals in the auditory system, audiometric measurement methods, directional hearing), electroacoustics (e.g., microphones, loudspeakers, hearing aids, and cochlear implants), various therapies for hearing loss, noise control, and sound design in medical engineering.                                     |
| <b>Teaching and Learning Forms</b>                  | 2 hours per week of lectures, 1 hour per week of practical lab courses, and self-study.                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Prerequisites for Participation</b>              | No prior knowledge is required.                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Usability</b>                                    | The module is an elective module within the elective area of Biomedical Engineering Specialization according to § 6 Paragraph 3 SO and § 33 Paragraph 3 PO of the main study program in the diploma program Biomedical Engineering.                                                                                                                                                                                                                                   |
| <b>Prerequisites for the Award of Credit Points</b> | Credit points are awarded when the module examination is passed. The module examination consists of a written exam lasting 90 minutes.                                                                                                                                                                                                                                                                                                                                |
| <b>Credit Points and Grades</b>                     | 5 credit points can be earned through the module. The module grade corresponds to the grade of the examination performance.                                                                                                                                                                                                                                                                                                                                           |
| <b>Frequency of the Module</b>                      | The module is offered every summer semester.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Workload</b>                                     | The total workload is 150 hours.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Duration of the Module</b>                       | The module lasts one semester.                                                                                                                                                                                                                                                                                                                                                                                                                                        |