

This is a summary of the curriculum "Biomedical Engineering" (valid since October 2020), meant to be used as a rough guide. It is not meant as a replacement, nor is it legally binding. A link to download the actual document is here. For details concerning the advanced modules and free elective and soft skills, here is the link to TISS.

The following modules are to be completed:

• Life Sciences	15 ECTS
• 4 out of 7 modules from the Fundamentals	24 ECTS
• Focus:	30 ECTS
– 15 ECTS Basic	
– 9 ECTS Advanced	
– 6 ECTS Project	
• Filler Pool	12 ECTS
• Free electives and soft skills	9 ECTS
• Master thesis	30 ECTS
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Overall:	120 ECTS

Focus:

Choose one out of four - from the chosen one you have to do the following:

- the module "Basics" (15 ECTS)
- min. 9 ECTS from the module "Advances" (min. 3 have to be UE, LU, VU, SE or PR)
- the Project (6 ECTS)

Filler Pool:

12 ECTS from any Basic-, Advanced-modules and Projects (except those of your focus).

Free elective and soft skills:

At least 4.5 ECTS "Fachübergreifende Qualifikationen" (inter-disciplinary qualifications), topping that off to 9 ECTS with "freie Wahlfächer" (elective courses).

• Life Sciences	15 ECTS
<input type="checkbox"/> Module Basics of Biology	6 ECTS
<input type="checkbox"/> 3 VO Biology	
<input type="checkbox"/> 1.5 VU Introduction to Microscopy in Biology	
<input type="checkbox"/> 1.5 VO Introduction to Biostatistics	
<input type="checkbox"/> Module Basics of Physiology	9 ECTS
<input type="checkbox"/> 4.5 VO Anatomy and Histology	
<input type="checkbox"/> 4.5 VO Physiology and Basics of Pathology	
• Fundamentals Biomedical Engineering (4 out of 7 modules)	24 ECTS
<input type="checkbox"/> Module Biophysics and Biomechanics	6 ECTS
<input type="checkbox"/> 3 VO Introduction into Biophysics	
<input type="checkbox"/> 3 VU Introduction to Biomechanics	
<input type="checkbox"/> Module Biosignals and Bioinstrumentation	6 ECTS
<input type="checkbox"/> 3 VO Biomedical Sensors and Signals	
<input type="checkbox"/> 3 VU Biomedical Instrumentation	
<input type="checkbox"/> Module Biochemistry	6 ECTS
<input type="checkbox"/> 3 VO Introduction to Biological Chemistry	
<input type="checkbox"/> 3 VO Instrumental Analytical Biochemistry	
<input type="checkbox"/> Module Biomedical Signal Processing	6 ECTS
<input type="checkbox"/> 3 VU Advanced Biostatistics	
<input type="checkbox"/> 3 VO Medical Image Processing	
<input type="checkbox"/> Module Biomaterials and Tissue Engineering	6 ECTS
<input type="checkbox"/> 3 VO Biocompatible Materials	
<input type="checkbox"/> 3 VU Introduction to Biomaterials and Tissue Engineering	
<input type="checkbox"/> Module Cell Biology	6 ECTS
<input type="checkbox"/> 3 VO Molecular Biology of the Cell	
<input type="checkbox"/> 1.5 VO Biomembranes	
<input type="checkbox"/> 1.5 VO Mathematical Systems Biology	
<input type="checkbox"/> Scientific Computing	6 ECTS
<input type="checkbox"/> 3 VU Modeling and Simulation	
<input type="checkbox"/> 3 VU Programming with MATLAB	
• Free electives and soft skills	9 ECTS
<input type="checkbox"/> Module Fachübergreifende Qualifikationen	min. 4.5 ECTS
<input type="checkbox"/> Module Freie Wahl	"max." 4.5 ECTS

• **Focus fields:**

– Biomaterials & Biomechanics	30 ECTS
<input type="checkbox"/> Module: Basics	15 ECTS
<input type="checkbox"/> 3 VO Biomaterials	
<input type="checkbox"/> 3 VO Transport phenomena in biological systems	
<input type="checkbox"/> 3 VU Computational Biomaterials and Biomechanics	
<input type="checkbox"/> 3 VO Modelling of the Human Locomotor System	
<input type="checkbox"/> 3 VO Tissue Biomechanics	
<input type="checkbox"/> Module: Advances in Biomaterials & Biomechanics	9 ECTS
<input type="checkbox"/> Project: Biomaterials and Biomechanics	6 ECTS
– Biomedical Signals & Instrumentation	30 ECTS
<input type="checkbox"/> Module: Basics	15 ECTS
<input type="checkbox"/> 3 VU Biomedical Mass Spectrometry	
<input type="checkbox"/> 3 VO Biochip Technologies in (Bio)Analytical Chemistry	
<input type="checkbox"/> 3 VO Sensors and Microsystem Technology	
<input type="checkbox"/> 3 VO Laser in Physics, Chemistry, Biology and Medicine	
<input type="checkbox"/> 3 VU Microelectronic Concepts for Biomedical Interfacing	
<input type="checkbox"/> Module: Advances in Biomedical Signals & Instrumentation	9 ECTS
<input type="checkbox"/> Project: Biomedical Signals & Instrumentation	6 ECTS
– Mathematical & Computational Biology	30 ECTS
<input type="checkbox"/> Module: Basics	15 ECTS
<input type="checkbox"/> 3 VO Bioinformatics for Biomedical Engineers	
<input type="checkbox"/> 3 VU Computational Biomaterials and Biomechanics	
<input type="checkbox"/> 3 VU Computer Simulation in Medicine	
<input type="checkbox"/> 3 VO Control Models in Physiology	
<input type="checkbox"/> 3 VO Neuron Modeling	
<input type="checkbox"/> Module: Advances in Mathematical & Computational Biology	9 ECTS
<input type="checkbox"/> Project: Mathematical and Computational Biology	6 ECTS
– Medical Physics & Imaging	30 ECTS
<input type="checkbox"/> Module: Basics	15 ECTS
<input type="checkbox"/> 3 VO Biological and Medical Applications of Nuclear Physics I	
<input type="checkbox"/> 3 VO Computerassisted Imaging Concepts	
<input type="checkbox"/> 3 VO Microscopy of Biomolecules	
<input type="checkbox"/> 3 VO Medical Physics of Diagnostic Imaging	
<input type="checkbox"/> 3 VU Ultrasound in Nature, Engineering and Medicine	
<input type="checkbox"/> Module: Advances in Medical Physics & Imaging	9 ECTS
<input type="checkbox"/> Project: Medical Physics & Imaging	6 ECTS