Courses of the Master's program Biomedical Engineering

	Course Title	Instructors	Faculty	ECTS
Basic Modules (30 ECTS)	**Basics in Human Medicine (mandatory for students with non-medical background)**			**15**
	Anatomy	N. Friederich	DBE	6
	Physiology	D. Kunz	DBE	6
	Biology of Tissue Regeneration	A. Scherberich	DBM/DBE	3
	Mathematics (mandatory for students with medical/life science background)			**15**
	Mathematics for Biomedical Engineering I	E. Delgado-Eckert	DBE	5
	Programming and Statistics for Medical Data Analysis	P. Cattin, P. Sinues	DBE	4
	Mechanics in Biomedical Engineering	G. Rauter	DBE	6
	Biomedical Engineering (mandatory for all students)			**15**
	Materials Science and Biomaterials	B. Müller	DBE	5
	Principles of Medical Imaging	P. Cattin	DBE	3
	Clinical Biomechanics	E. Viehweger	DBE	3
	Data Processing and Control	P. Cattin	DBE	4

Each student attends the courses of the Biomedical Engineering Module and the courses of one of the other 2 Modules (Mathematics OR Basics in Human Medicine)

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	Course Title	Instructors	Faculty	ECTS
Major Modules (at least 28 ECTS)	**Biomaterials Science & Nanotechnology (B. Müller)**			**28**
	Biomedical Acoustics	C. Stieger	DBE	3
	Cells and Technologies in Regenerative Surgery	A. Scherberich	DBM/DBE	3
	Digital Dentistry	B. Müller	DBE	3
	Magnetic Resonance Imaging	O. Bieri	DBE	3
	Materials in Medicine: Tissue Regeneration	S. Madduri	DBE	8
	Materials in Medicine: Nanostructure Analysis	B. Müller	DBE	
	Applied Engineering in the Hospital	N. Friederich	DBE	2
	Applied methods in forensic biomedical and toxicological science	C. Lenz	DBE	2
	Laser and Optics in Medicine	F. Canbaz	DBE	4
	Mathematics for Biomedical Engineering II	E. Delgado-Eckert	DBE	4
	Regulatory Affairs and its Applications	P. Cattin	DBE	2
	Einführung in die angewandte Nano-Wissenschaftsethik	R. Andorno	Nano	3
Further Modules (32 ECTS)	**Free Electives**			**2**
	The students can acquire up to 2 ECTS from a course offered at the university or by learning contract.			
	Master Thesis			**25**
	Six-month Master thesis is typically on a clinically relevant challenge in one of the major supervised by an instructor of the program. Master thesis is ideally supervised by a technical expert and a medical doctor.			
	Master Exam			**5**
	Exam is usually public and takes 45 minutes. Two to four instructors judge the exam.			
Total				**90**

Each student attends 4 of these 5 mandatory courses

Each student attends 1 of these 2 mandatory courses

	Course Title	Instructors	Faculty	ECTS
Major Modules (at least 28 ECTS)	**Image-Guided Therapy (P. Cattin)**			**28**
	Advanced Methods in Medical Image Analysis	P. Cattin	DBE	6
	Applied Control	G. Rauter	DBE	5
	Computer-Assisted Surgery	P. Cattin	DBE	3
	Laser and Optics in Medicine	F. Canbaz	DBE	4
	Magnetic Resonance Imaging	O. Bieri	DBE	3
	Applied Engineering in the Hospital	N. Friederich	DBE	2
	Biomedical Acoustics	C. Stieger	DBE	3
	Medical Image Analysis Lab	P. Cattin	DBE	5
	Mathematics for Biomedical Engineering	E. Delgado-Eckert	DBE	4
	Rapid Prototyping for Measurement Systems, Automation, Control, Artificial Intelligence, and Virtual Reality	G. Rauter	DBE	2
	Regulatory Affairs and its Applications	P. Cattin	DBE	2
	Einführung in die angewandte Nano-Wissenschaftsethik	R. Andorno	Nano	3
Further Modules (32 ECTS)	**Free Electives**			**2**
	The students can acquire up to 2 ECTS from a course offered at the university or by learning contract.			
	Master Thesis			**25**
	Six-month Master thesis is typically on a clinically relevant challenge in one of the major supervised by an instructor of the program. Master thesis is ideally supervised by a technical expert and a medical doctor.			
	Master Exam			**5**
	Exam is usually public and takes 45 minutes. Two to four instructors judge the exam.			
Total				**90**

Each student attends 4 of these 5 mandatory courses; Each student attends 1 of these 2 mandatory courses