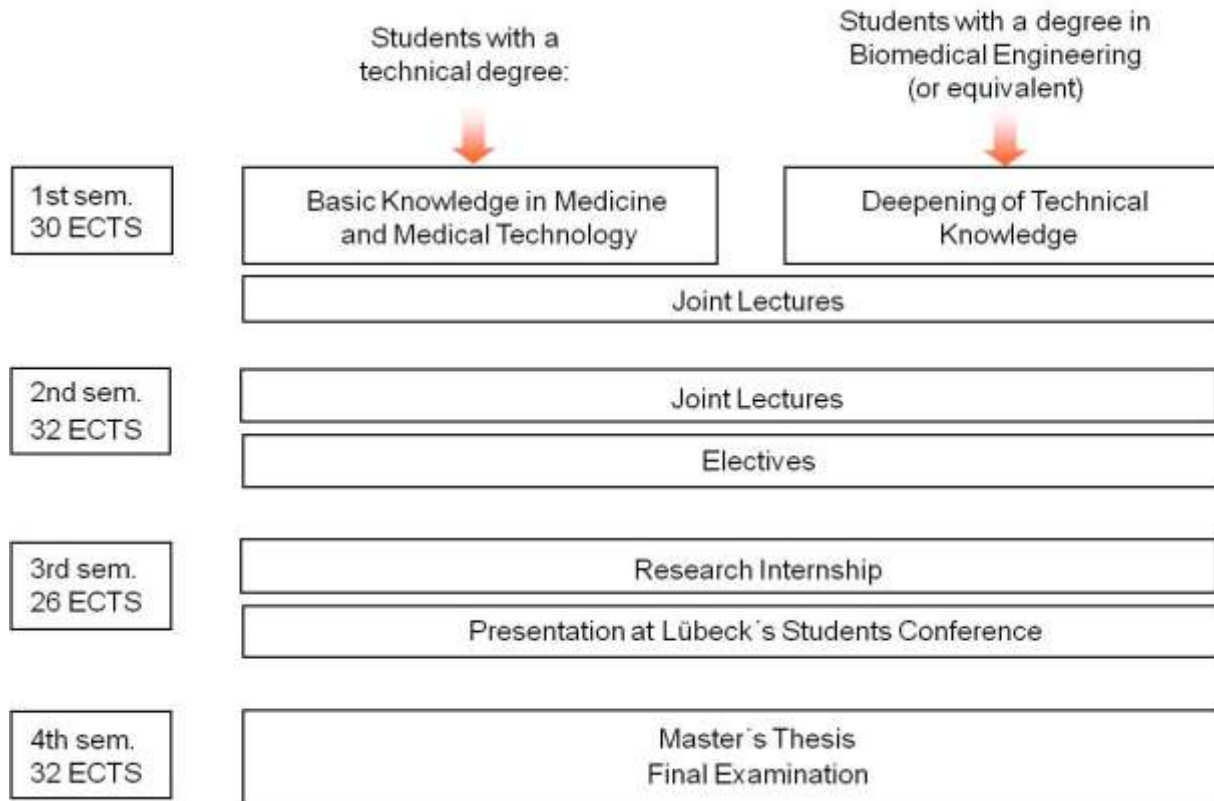


Joint Master's Program Biomedical Engineering: Structure and Curriculum



Required Courses 1 st Semester, Group I				
Students holding a degree in Electronics, Information Technology, Mechanical Engineering, Mechatronics, Physics, Process Engineering, Material Technology or equivalent				
Courses	1 st Semester (Hours per week)		Creditpoints	Examination (type, duration)
	L	P		
X4M 1000 - Medicine			8	
X4M 1010 - Anatomy	2			A1-90 min.
X4M 1020 - Medical Microbiology and Hygiene	2	2		A1-90 min.
X4M 1030 - Physiology	2			A1-90 min.
X4M 1100 - Natural Sciences			6	
X4M 1110 - Biomechanics	2			A1-90 min.
X4M 1120 - Biophysics	2			A1-90 min.
X4M 1200 - Medical Technology			8	
X4M 1210 - Medical Technology	4			A1-90 min.
X4M 1220 - Medical Technology - Lab.		2		B
X4M 1300 - System Theory			8	
X4M 1310 - Signals and Systems in Medical Imaging	2			A2
X4M 1320 - Signals and Systems in Medical Imaging Lab.		1		B
X4M 1330 - Numerical Methods in Medicine	2			A1-90 min.
Total 1st Semester	23		30	

Required Courses 1 st Semester, Group II				
Students holding a degree in Biomedical Engineering, Medical Technology or equivalent				
Courses	1 st Semester (Hours per week)		Creditpoints	Examination (type, duration)
	L	P		
X4M 1500 - Signal Processing			6	
X4M 1510 - Signal Processing	2			A2
X4M 1520 - Signal Processing - Lab.		2		B
X4M 1600 - Electronics and Optics			8	
X4M 1610 - Medical Electronics	2			A1-90 min.
X4M 1620 - Medical Electronics - Project		4		B
X4M 1630 - Photonics I	2			A1-90 min.
X4M 1700 - Design Engineering¹			8	
X4M 1710 - Design Methodology	2			A2
X4M 1720 - Design Methodology - Project		2		B
X4M 1730 - Materials Science	4			A1-90 min.
X4M 1300 - System Theory			8	
X4M 1310 - Signals and Systems in Medical Imaging	2			A2
X4M 1320 - Signals and Systems in Medical Imaging Lab.		1		B
X4M 1330 - Numerical Methods in Medicine	2			A1-90 min.
Total 1st Semester	25		30	

Required Courses 2 nd Semester (all students)				
Courses	2 nd Semester (Hours per week)		Creditpoints	Examination (type, duration)
	L	P		
X4M 2000 - Clinical Application			3	
X4M 2010 - Clinical Application of Medical Technology - Project	2	2		B
X4M 2100 - Imaging			8	
X4M 2110 - Imaging	2			A1-90 min.
X4M 2120 - Image Processing	2			A1-90 min.
X4M 2130 - Numerical Methods in Medicine – Lab		2		B
X4M 2200 - Management			6	
X4M 2210 - Regulatory Affairs	2			A1-90 min.
X4M 2220 - Scientific writing		1		B
X4M 2225 - Elective from list II	2			A
X4M 2300 - Electives I			15	
Electives from list I, overall 10 hours per week		10		each A
Total 2nd Semester	25		32	

¹ Only for students who received their Bachelor's degree in "Biomedizintechnik" at the FH Lübeck: The module "Design Engineering" can be substituted by the module "Medical Technology". Please, contact the study coordinator within the first 4 weeks.

Required Courses 3 rd Semester			
		Creditpoints	Examination (type, duration)
X4M 3000 - Research Internship/s (one project or two projects of 2 months each)	total 4 months	20	B
X4M 3100 - Attendance at Lübeck's Students Conference		6	B
Total 3rd semester		26	

Required Courses 4 th Semester			
		Creditpoints	Examination (type, duration)
X4M 6000 - Master's Thesis	6 months	30	A
X4M 8000 - Final examination		2	A2-60 min.
Total 4th semester		32	
Total study	48/50	120	

Electives	2 nd Semester		
	Hours per week		Examination (type, duration)
	L	P	
List I of Electives			
<ul style="list-style-type: none"> • X4M 2305 - Design of Medical Electronic Devices • X4M 2310 - Computer Aided Techniques in Design • X4M 2315 - Biophysics - Laboratory • X4M 2320 - Human Biochemistry / Medical Biotechnology • X4M 2325 - Medical Technology - Selected Topics • X4M 2330 - Computer Vision • X4M 2335 - Photonics II and Laser Applications • X4M 2340 - Medical Robotics • X4M 2345 - Specialized Biomechanics • X4M 2350 - Artificial Intelligence* • X4M 2355 - Anaesthesia and Artificial Respiration • X4M 236X - Other lectures/labs upon approval of the examination committee 	2	4 2 2 2 2 1 2 2	each A
List II of Electives			
<ul style="list-style-type: none"> • X4M 2230 - Health Technology Assessment • X4M 2235 - Innovation Management and Marketing • X4M 2240 - Quality Management in Healthcare • X4M 2245 - Successful negotiation and communication 	2 2 2 2		each A

Abbreviations / Notes / Footnotes

* only offered during the winter term

Examinations: A1: written examination; mark will be taken into consideration for the final grade
A2: oral examination; mark will be taken into consideration for the final grade
B: mark will not be taken into consideration for the final grade

Valid from winter term 2016/17

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