UNIVERSITÄT ZU LÜBECK

FACH HOCHSCHULE LÜBECK
University of Applied Sciences

Joint Master's Program Biomedical Engineering: Structure and Curriculum

Students with a technical degree:

Students with a degree in Biomedical Engineering (or equivalent)

1st sem. 30 ECTS	Basic Knowledge in Medicine and Medical Technology	Deepening of technical Knowledge
	Joint Lectures	

2nd sem. 27 ECTS	Joint Lectures
	Electives

8 ECTS	Research project (external or internal, at least 8 weeks)

3rd sem. 25 ECTS	Master Thesis Final Examination
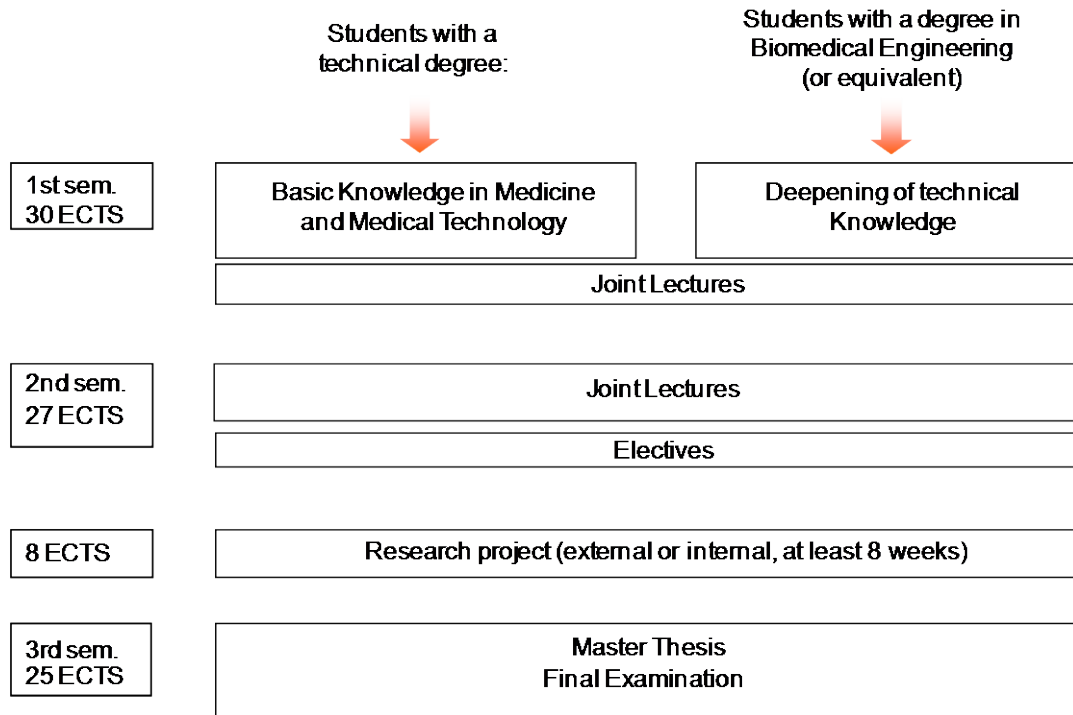
Required Courses 1st Semester, Group I				
Students holding a degree in Electronics, Information Technology, Mechanical Engineering, Mechatronics, Physics, Process Engineering, Material Technology or equivalent				
Courses	1st Semester (*Hours per week*)		Credit-points	Examination (type, duration)
	L	P		
XM 1100 - Medicine			**8**	
XM 1110 - Anatomy	2			A1-90 min.
XM 1120 - Hygiene and Sterilization	2			A1-90 min.
XM 1130 - Medical Microbiology		2		B
XM 1140 - Physiology	2			A1-90 min.
XM 1200 - Natural Sciences			**6**	
XM 1210 - Biomechanics	2			A1-90 min.
XM 1220 - Biophysics	2			A1-90 min.
XM 1300 - Medical Technology I			**8**	
XM 1310 - Medical Technology	4			A1-90 min.
XM 1320 - Medical Technology - Lab.		2		B
XM 1400 - System Theory			**8**	
XM 1430 - Signals and Systems in Medical Imaging	2			A2
XM 1435 - Signals and Systems in Med. Imag.-Lab.		1		B
XM 1420 - Numerical Methods in Medicine	2			A1-90 min.
Total 1st Semester	**23**		**30**	

Required Courses 1st Semester, Group II				
Students holding a degree in Biomedical Engineering, Medical Technology or equivalent				
Courses	1st Semester (*Hours per week*)		Credit-points	Examination (type, duration)
	L	P		
XM 2100 - Signal Processing			**6**	
XM 2110 - Signal Processing	2			A2
XM 2120 - Signal Processing – Lab.		2		B
XM 2200 - Electronics and Optics			**8**	
XM 2210 - Medical Electronics	2			A1-90 min.
XM 2220 - Medical Electronics - Project		4		B
XM 2230 - Photonics I	2			A1-90 min.
XM 2300 - Design Engineering			**8**	
XM 2310 - Design Methodology	2			A2
XM 2320 - Design Methodology - Project		2		B
XM 2330 - Materials Science	4			A1-90 min.
XM 1400 - System Theory			**8**	
XM 1430 - Signals and Systems in Medical Imaging	2			A2
XM 1435 - Signals and Systems in Medical Imaging Lab.		1		B
XM 1420 - Numerical Methods in Medicine	2			A1-90 min.
Total 1st Semester	**25**		**30**	

Required Courses 2nd Semester (all students)				
Courses	2nd Semester (*Hours per week*)		Credit-points	Examination (type, duration)
	L	P		
XM 2000 - Clinical Application			**3**	
XM 2510 - Clinical Application of Medical Technology - Project	2	2		B
XM 2400 - Imaging			**8**	
XM 2530 - Imaging	2			A1-90 min.
XM 2720 - Image Processing	2			A1-90 min.
XM 2410 - Numerical Methods in Medicine - Lab		2		B
XM 2600 - Management			**4**	
XM 2610 - Regulatory Affairs	2			A1-90 min.
Elective from list II	2			A
XM 3000 - Elective			**12**	
Electives from list I, overall 10 hours per week	10			each A
Total 2nd Semester	**24**		**27**	

Required Courses 3rd Semester			
	Hours per week	Credit-points	Examination (type, duration)
XM 1050 - Research Project / Internship (during the semester break)	**at least 8 weeks**	**8**	
XM 6000 - Master's Thesis	**5 months**	**23**	A
XM 8000 - Final examination		**2**	A2-60 min
Total 3rd semester		**33**	
Total study	**47/49**	**90**	

Electives	2nd Semester (*Hours per week*)		Examination (type)
	L	P	
List I of Electives			each A
• XM 2710 - Design of Medical Electronic Devices		4	
• XM 2840 - Computer Aided Techniques in Design	2	2	
• XM 3010 - Biophysics - Laboratory		2	
• XM 3050 - Human Biochemistry / Medical Biotechnology	2	2	
• XM 3070 - Medical Technology - Selected Topics	2	2	
• XM 3080 - Modelling and Processing of Medical Data		2	
• XM 3100 - Photonic II and Laser Applications	2	2	
• XM 3110 - Robotics - Algorithms and Medical Applications	2		
• XM 3120 - Specialized Biomechanics	1	1	
• XM 3130 - Artificial Intelligence*	2		
• XM 3150 - Anaesthesia and Artificial Respiration	2	2	
• XM 3160 - Students Conference		4	
• Other lectures/labs upon approval of the examination committee			
List II of Electives			each A
• XM 2620 - Health Technology Assessment	2		
• XM 2630 - Innovation Management and Marketing	2		
• XM 2640 - Quality Management in Healthcare	2		

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 2013/14