## MASTER OF COMPUTATIONAL ENGINEERING, BIOMEDICINE TRACK

## Curriculum

Curriculuili			
Code	Title		Credit Hours
Core Courses			(9)
Select nine credit hours from			9
BME 522	Mathematical Methods in Biomedical Engineering	3	
BME 553	Advanced Quantitative Physiology	3	
CHE 506	Entrepreneurship and Intellectual Property Management	3	
CHE 536	Computational Techniques in Engineering	3	
ECE 505	Applied Optimization for Engineers	3	
ECE 511	Analysis of Random Signals	3	
MATH 577	Computational Mathematics I	3	
MATH 581	Finite Element Method	3	
MMAE 451	Finite Element Methods in Engineering	3	
MMAE 501	Engineering Analysis I	3	
MMAE 502	Engineering Analysis II	3	
MMAE 532	Advanced Finite Element Methods	3	
Biomedicine Courses			(12)
Select 12 credit hours from th	ne following courses:		12
BME 445	Quantitative Neural Function	3	
BME 523	Cell Biomechanics: Principles and Biological Processes	3	
BME 524	Quantitative Aspects of Cell and Tissue Engineering	3	
BME 525	Introduction to Medical Devices, BioMEMS and Microfluidics	3	
BME 538	Neuroimaging	3	
BME 597	Special Problems	1-6	
CHE 516	Technologies for Treatment of Diabetes	3	
or BME 517	Technologies for Treatment of Diabetes		
CHE 585	Drug Delivery	3	
ECE 565	Computer Vision and Image Processing	3	
Elective Courses			(9)
Select nine credit hours from	the following courses: 1		g
BME 445	Quantitative Neural Function	3	
BME 522	Mathematical Methods in Biomedical Engineering	3	
BME 523	Cell Biomechanics: Principles and Biological Processes	3	
BME 524	Quantitative Aspects of Cell and Tissue Engineering	3	
BME 525	Introduction to Medical Devices, BioMEMS and Microfluidics	3	
BME 538	Neuroimaging	3	
BME 553	Advanced Quantitative Physiology	3	
BME 597	Special Problems	1-6	
CAE 530	Finite Element Method of Analysis	3	
CAE 534	Computational Techniques in Finite Element Analysis	3	
CAE 535	Nonlinear Finite Element Analysis	3	
CAE 597	Special Problems	1-9	
CHE 439	Numerical and Data Analysis	3	
CHE 506	Entrepreneurship and Intellectual Property Management	3	
CHE 516/BME 517	Technologies for Treatment of Diabetes	3	
CHE 516/BME 517	Applications of Mathematics to Chemical Engineering	3	
CHE 536	Computational Techniques in Engineering	3	
OFE 330		3	

Total Credit Hours			30
MMAE 597	Special Topics	1-9	
MMAE 570	Computational Methods in Materials Science and Engineering	3	
MMAE 532	Advanced Finite Element Methods	3	
MMAE 518	Spectral Methods in Computational Fluid Dynamics	3	
MMAE 517	Computational Fluid Dynamics	3	
MMAE 502	Engineering Analysis II	3	
MMAE 501	Engineering Analysis I	3	
MMAE 451	Finite Element Methods in Engineering	3	
MMAE 450	Computational Mechanics II	3	
MATH 581	Finite Element Method	3	
MATH 577	Computational Mathematics I	3	
ECE 597	Special Problems	1-9	
ECE 567	Statistical Signal Processing	3	
ECE 566	Machine and Deep Learning	3	
ECE 565	Computer Vision and Image Processing	3	
ECE 563	Artificial Intelligence in Smart Grid	3	
ECE 535	Discrete Time Systems	3	
ECE 533	Robust Control	3	
ECE 511	Analysis of Random Signals	3	
ECE 505	Applied Optimization for Engineers	3	
CHE 597	Special Problems	1-9	
CHE 585	Drug Delivery	3	
CHE 560	Statistical Quality and Process Control	3	

<sup>1</sup> Course must not have been used towards the core course or specialization course requirements.