

MASTER OF COMPUTATIONAL ENGINEERING, COMPUTATIONAL MECHANICS TRACK

Curriculum

Code	Title	Credit Hours
Core Courses		(9)
Select nine credit hours from the following courses:		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
Computational Mechanics Courses		(12)
Select 12 credit hours from the following courses:		12
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	1-6
CHE 536	Computational Techniques in Engineering	3
CHE 560	Statistical Quality and Process Control	3
MMAE 450	Computational Mechanics II	3
MMAE 517	Computational Fluid Dynamics	3
MMAE 518	Spectral Methods in Computational Fluid Dynamics	3
MMAE 532	Advanced Finite Element Methods	3
MMAE 570	Computational Methods in Materials Science and Engineering	3
MMAE 597	Special Topics	1-6
Elective Courses		(9)
Select nine credit hours from the following courses: ¹		9
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	1-6
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 535	Applications of Mathematics to Chemical Engineering	3

CHE 536	Computational Techniques in Engineering	3
CHE 560	Statistical Quality and Process Control	3
CHE 585	Drug Delivery	3
CHE 597	Special Problems	1-6
ECE 505	Applied Optimization for Engineers	3
ECE 511	Analysis of Random Signals	3
ECE 533	Robust Control	3
ECE 535	Discrete Time Systems	3
ECE 563	Artificial Intelligence in Smart Grid	3
ECE 565	Computer Vision and Image Processing	3
ECE 566	Machine and Deep Learning	3
ECE 567	Statistical Signal Processing	3
ECE 597	Special Problems	1-6
MATH 577	Computational Mathematics I	3
MATH 581	Finite Element Method	3
MMAE 450	Computational Mechanics II	3
MMAE 451	Finite Element Methods in Engineering	3
MMAE 501	Engineering Analysis I	3
MMAE 502	Engineering Analysis II	3
MMAE 508	Perturbation Methods	3
MMAE 509	Introduction to Continuum Mechanics	3
MMAE 517	Computational Fluid Dynamics	3
MMAE 518	Spectral Methods in Computational Fluid Dynamics	3
MMAE 532	Advanced Finite Element Methods	3
MMAE 544	Design Optimization	3
MMAE 570	Computational Methods in Materials Science and Engineering	3
MMAE 594	Project for Master of Engineering Students	1-6
MMAE 597	Special Topics	1-6

Total Credit Hours
30

¹ Course must not have been used towards the core course or specialization course requirements.