

Doctor of Philosophy in Computational Engineering

Sample Programs of Study

The programs of study listed below are for illustration purposes only! Actual programs of study are strongly influenced by each student's background in and pre-requisite knowledge of the three areas of emphasis: high-performance computing, numerical mathematics and the engineering application area. Each program of study is customized to the needs of the individual student, and is finalized with the assistance of the CME coordinator, the student's major professor, and the student's graduate committee.

Ph.D. - Regular Admission

Course	Credits	Title	Notes
MA 8203	3	Foundations of Applied Mathematics I	Numerical math
MA 8213	3	Foundations of Applied Mathematics II	Numerical math
MA 8463	3	Numerical Linear Algebra	Numerical math
CSE 6753	3	Foundations in Computation	High-performance computing
CSE 6163	3	Designing Parallel Algorithms	High-performance computing
CSE 6214	4	Software Engineering	High-performance computing
IE 6773	3	System Simulation I	Application area
IE 8773	3	System Simulation II	Application area
CME 9000	25	Dissertation Research	
Tailored to a student interested in Systems Engineering. Student already has a M.S. degree in Industrial Engineering.			Total: 50 credits

Ph.D. - Direct Admission

Course	Credits	Title	Notes
MA 8363	3	Numerical Solution of Systems of Nonlinear Equations	Numerical math
MA 8443	3	Numerical Solution of Partial Differential Equations I	Numerical math
MA 8453	3	Numerical Solution of Partial Differential Equations II	Numerical math
MA 8383	3	Numerical Solution of Ordinary Differential Equations I	Numerical math
MA 8393	3	Numerical Solution of Ordinary Differential Equations I	Numerical math
CSE 6753	3	Foundations in Computation	High-performance computing
CSE 6163	3	Designing Parallel Algorithms	High-performance computing
CSE 6833	3	Introduction to Analysis of Algorithms	High-performance computing
CSE 8833	3	Algorithms	High-performance computing
CSE 6413	3	Principles of Computer Graphics	Graphics and Visualization
CSE 8413	3	Visualization	Graphics and Visualization
ECE 6413	3	Digital Signal Processing	Graphics and Visualization
ECE 8443	3	Pattern Recognition	Application area
ECE 8453	3	Intro to Wavelets	Application area
ECE 8473	3	Digital Image Processing	Application area
ECE 8483	3	Image and Video Coding	Application area
CME 9000	24	Dissertation Research	

Tailored to a student interested in image processing. Student admitted with only a BS degree in math, physics, or engineering.

Total: 72 credits