List of Pre-Approved Electives for Systems Engineering Program

Systems Engineering Masters

1. All the core courses must be satisfactorily completed.
2. At least one course from the Systems Modeling and Analysis Group must be completed.
3. No more than one course from the Systems Management Group may be used.
4. A minimum of thirty Credit hours are required.
5. The entire selection of courses for the degree must be approved by the student's advisor.
6. Other courses could be accepted as electives if approved by the Director of Graduate Studies.

Systems Engineering Options

1. All the core courses must be satisfactorily completed.
2. Take any course from the list of pre-approved electives.

Caution

Check in the online course Roster to be sure the course is being offered in the Semester you want it.
The Semesters listed are when the courses have been offered in the past

CORE courses

Course Num	Course Name	Credit	Semester	Group
SYSEN 510, CEE 504, ComS 504, ECE 512, MAE 591, ORIE 512	Applied Systems Engineering	3	Fall	Core
SYSEN 520, CEE 505, ComS 505, ECE 513, MAE 592, ORIE 513	Systems Analysis - Architecture, Behavior & Optimization	3	Spring	Core
SYSEN 590, AEP 751, BEE, CEE 591/2, ChemE 590, ComS 790, ECE 693/4, MAE 690, ORIE 597, etc.	Systems Engineering Project	6 to 8	Fall and Spring	Core
CEE 590	Project Management	4	Fall, Spring	Core

BEE courses

Course Num	Course Name	Credit	Semester	Group
BEE 450	Bioinstrumentation	4	Spring	Application
BEE 453, MAE453	CAE: Applications to Biomedical Processes	3	Spring	Application
BEE 475	Environmental Systems Analysis	3	Fall	Modeling & Analysis
BEE 476	Solid Waste Engineering	3	Spring	Application
BEE 478	Ecological Engineering	3	Spring	Application
BEE 651	Bioremediation: Engineering Organisms	3	Spring	Application
BEE 685	Biological Engineering Analysis	4	Spring	Modeling & Analysis

BME courses

Course Num	Course Name	Credit	Semester	Group
BME 404, ECE 402	Biomedical System Design	4	Spring	Application
ChemE 481, BME 481	Biomedical Engineering	3	Spring	Application
MAE 565, BME 565	Biomechanical Systems--Analysis and Design	3 to 4	Spring	Application

CEE courses

Course Num	Course Name	Credit	Semester	Group
CEE 509, COMS 572, ORIE 533	Heuristic methods for optimization	3	Fall	Modeling & Analysis
CEE 593	Engineering Mgt. Methods I	3	Fall	Management
CEE 595	Construction Planning and Operations	3	Fall	Management
CEE 597	Risk Analysis and Management	3	Spring	Application
CEE 598	Introduction to Decision Analysis	3	Fall	Management
CEE 606	Civil and Environmental Systems Engineering	3	Fall	Application
CEE 620	Water Resource Systems Engineering	3	Spring	Application

CEE 663	Network Flows and Algorithms	3	Spring	Application
CEE 675	Concrete Materials and Construction	3	Spring	Application
CEE 692	Special Topics in Engineering Management	3	Fall, Spring	Application

CHEME courses

Course Num	Course Name	Credit	Semester	Group
ChemE 470	Process Control Strategies	3	Spring	Application
ChemE 472, ECE 472, MAE 578	Feedback Control Systems	4	Fall	Modeling & Analysis
ChemE 481, BME 481	Biomedical Engineering	3	Spring	Application
ChemE 572	Managing New Business Development	3	Fall	Management
ChemE 661	Air Pollution Control	3	Spring	Application

CS courses

Course Num	Course Name	Credit	Semester	Group
ComS 412	Introduction to Compilers	3	Spring	Application
ComS 414	Systems Programming & Operating Systems	3	Fall,Spr,Sum	Modeling & Analysis
ECE 475, COMS 416	Computer Architecture	4	Fall	Application
ComS 419	Computer Networks	4	Spring	Application
ComS 421	Numerical Analysis	4	Fall	Modeling & Analysis
ComS 472/473	Foundations of Artificial Intelligence/ Practicum	5	Fall	Modeling & Analysis
ComS 482	Introduction to Analysis of Algorithms	4	Spr,Sum	Modeling & Analysis
ComS 501	Software Engineering	4	Spring	Modeling & Analysis
ComS 513	System Security	4	Fall	Application
ComS 514	Intermediate Computer Systems	4	Spring	Application
COMS 516, ECE 572	Parallel computer architecture	4	Spring	Application
ComS 522	Computational Tools & Methods for Finance	4	Spring	Modeling & Analysis
CEE 509, COMS 572, ORIE 533	Heuristic methods for optimization	3	Fall	Modeling & Analysis
ComS 578	Emp. Meth. In Machine Learning & Data Mining	4	Fall	Application
ComS 681	Analysis of Algorithms	4	Fall	Modeling & Analysis

ECE courses

Course Num	Course Name	Credit	Semester	Group
BME 404, ECE 402	Biomedical System Design	4	Spring	Application
ECE 425	Digital Signal Processing	4	Spring	Modeling & Analysis
ECE 426	Applications of Signal Processing	4	Spring	Application
ECE 430	Lasers & Optical Electronics	4	Fall	Application
ECE 432	MicroElectro Mechanical Systems (MEMS)	3	Spring	Application
ECE 433	Introduction to microwave devices & circuits	4	Fall	Application
ECE 451	Electrical Power Systems I	4	Fall	Application
ECE 452	Electrical Power Systems II	4	Spring	Application
ChemE 472, ECE 472, MAE 578	Feedback Control Systems	4	Fall	Modeling & Analysis
ECE 475, COMS 416	Computer Architecture	4	Fall	Application
ECE 476	Digital System Design	4	Spring	Application
ECE 487	Introduction to Antennas and Radar	3	Fall	Application
ECE 488	RF Circuits and Systems	4	Spring	Application
ECE 521, MAE 521	Theory of Linear Systems	4	Fall	Modeling & Analysis
ECE 547	Computer Vision	4	Fall	Modeling & Analysis
ECE 551	Electric Systems Engineering and Economics	2	Fall	Management
ECE 563	Communications Networks	4	Fall	Application
ECE 566	Wireless Networks	4	Fall	Application

COMS 516, ECE 572	Parallel computer architecture	4	Spring	Application
ECE 575	High-Performance Processor Architecture	3	Spring	Application
ECE 579	Radio Frequency (RF) Integrated Circuit Design	6	Fall & Spring	Application

MAE courses

Course Num	Course Name	Credit	Semester	Group
BEE 453, MAE453	CAE: Applications to Biomedical Processes	3	Spring	Application
EngrG 461, MAE 461, ORIE 452	Entrepreneurship For Engineers	3	Fall	Management
MAE 506	Aerospace Propulsion Systems	3	Spring	Application
MAE 514	Design For Manufacture and Assembly	4	Fall, Spring	Application
MAE 517	Introduction To Robotics: Dynamics, Control, Design	3	Spring	Application
ECE 521, MAE 521	Theory of Linear Systems	4	Fall	Modeling & Analysis
MAE 565, BME 565	Biomechanical Systems--Analysis and Design	3 to 4	Spring	Application
MAE 571	Applied Dynamics	3	Fall	Application
ChemE 472, ECE 472, MAE 578	Feedback Control Systems	4	Fall	Modeling & Analysis
MAE 676	Model-Based Estimation	4	Fall	Modeling & Analysis

ORIE courses

Course Num	Course Name	Credit	Semester	Group
ORIE 432	Nonlinear Optimization	4	Spring	Modeling & Analysis
ORIE 435	Introduction To Game Theory	4	Spring	Modeling & Analysis
EngrG 461, MAE 461, ORIE 452	Entrepreneurship For Engineers	3	Fall	Management
ORIE 473	Empirical Research Methods In Financial Engineering	3	Spring	Application
ORIE 474	Statistical Data Mining	3	Fall	Modeling & Analysis
ORIE 476 (with ORIE 575 or ORIE 576)	Applied Linear Statistical Models	2	Spring wks 1-7	Modeling & Analysis
ORIE 515	Design of Manufacturing Systems	4	Fall	Application
ORIE 520	Operations Research I: Optimization I	4	Fall	Modeling & Analysis
ORIE 521	Optimization II	4	Spring	Modeling & Analysis
ORIE 523	Operations Research II: Introduction To Stochastic Processes I	4	Spring	Modeling & Analysis
CEE 509, COMS 572, ORIE 533	Heuristic methods for optimization	3	Fall	Modeling & Analysis
ORIE 551	Economic Analysis of Engineering Systems	4	Spring	Management
ORIE 560	Engineering Probability and Statistics II	4	Fall	Modeling & Analysis
ORIE 561	Queuing Systems:Theory and Its Applications	3	Fall	Modeling & Analysis
ORIE 562	Inventory Management	3	Fall	Application
ORIE 575 (with 476)	Experimental Design	2	Spring wks 8-14	Application
ORIE 580	Simulation Modeling & Analysis	4	Fall	Modeling & Analysis
ORIE 650	Applied Stochastic Processes	4	Fall	Modeling & Analysis
ORIE 680	Simulation	4	Fall	Modeling & Analysis

OTHER courses

Course Num	Course Name	Credit	Semester	Group
ILROB 776	Globalization and Its Discontents: The Organizational Implications of Global Competition	4	Fall	Management
NBA 507	Entrepreneurship For Scientists & Engineers	3	Fall, Spring	Management
NBA 553	Acct. & Fin. Analysis for Engr.	3	Spring	Management
NBA 663	Managerial Decision Making	3	Fall	Management