Pre-Approved Electives for Systems Engineering M.Eng.

Degree Requirements

1. All core courses must be completed

2. At least one elective that fulfills an Applications component must be completed

3. At least one elective that fulfills a Modeling & Analysis component must be completed

1. No more than one elective that fulfills a Management componenet may be applied toward your degree

1. No more than one seminar may be taken each semester (for a maximum of two)

2. A minimum of 30 credit hours taken for a letter grade must be completed

3. All courses taken during your degree must be approved by your advisor

4. Electives not included on this list may be petitioned to be included in your your degree plan

1. **Check the Class Roster online (classes.cornell.edu) for the most up-to-date class listings available each semester. The courses cited below are based on historical offerings and are subject to change.**

Core Courses

	Course Name	Credits	Semester	Group	Comments
SYSEN 5100, CEE 5240, ECE 5120, MAE 5910, ORIE 5140	Model Based Systems Engineering	4	Fall	Core	
SYSEN 5200, CEE 5252, MAE 5920, ORIE 5142	Systems Analysis Behavior and Optimization	3	Spring	Core	
CEE 5900	Project Management	4	Fall, spring	Core	
SYSEN 5900, SYSEN 5700	Systems Engineering Project	6-8	Fall, spring	Core	
CEE 6910	Principles of Project Leadership	4	Fall, spring	Core	

Pre-Approved Electives by Department

BEE Courses	Course Name	Credits	Semester	Group	Comments
BEE 5530	CAE: Applications to Biological Processes	3	Spring	Modeling & Analysis	
BEE 6710	Introduction to Groundwater	3	Spring	Application	
BEE 5750	Environmental Systems Analysis	3	Fall	Modeling & Analysis	
BEE 5330	Engineering Professionalism	1	Spring	Maangement	
BEE 6550	Biologically Inspired Microsystems Engineering	2-3	Fall	Application	Next Offered: 2019-2020

CEE Courses	Course Name	Credits	Semester	Group	Comments
CEE 5420	Energy Technologies and Subsurface Resources	3	Spring	Application	
CEE 5930	Engineering Management Methods	4	Fall	Management	
CEE 5950	Construction Planning and Operations	3	Fall	Management	
CEE 5980	Introduction to Decision Analysis	3	Fall	Management	
CEE 6200	Water-Resources Systems Engineering	3	Spring	Application	
CEE 6648	Sustainable Transportation Systems Design	3	Fall	Application	
CEE 6750	Concrete Materials and Construction	3	Spring	Application	
CEE 6790	Time Series Data Analysis for Civil, Mechanical & Geophysical Applications	3	Fall	Modeling & Analysis	
CEE 7740	Advanced Structural Concrete				
CHEME 6800, SYSEN 6800	Computational Optimization	4	Fall, Spring	Modeling & Analysis	
CHEME 6880, SYSEN 6880	Industrial Big Data Analytics and Machine Learning	4	Spring	Application or Modeling & Analysis	
CHEME 6662	Solar Energy Module	1	Spring	Application or Modeling & Analysis	

CS Courses	Course Name		Semester	Group	Comments
CS 5820	Introduction to Analysis of Algorithms	4	Summer, Fall, Spring	Modeling & Analysis	
CS 5150	Software Engineering	4	Fall	Application	
CS 5320	Introduction to Database Systems	3	Fall	Application	
CS 5412	Cloud Computing	4	Spring	Application	
CS 5420, ECE 5750	Advanced Computer Architecture	4	Fall	Application	
CS 5670,	Introduction to Computer Vision	3-4	Spring	Application	
CS 5740	Natural Language Processing	3-4	Fall, Spring	Application	
CS 5780	Machine Learning for Intelligent Systems	4	Fall	Modeling & Analysis	

ECE Courses	Course Name	Credits	Semester	Group	Comments
ECE 5130	Systems Analysis Behavior and Optimization	3	Spring	Application	

ECE 5271	Evolutionary Processes, Evolutionary Algorithms, Evolutionary Games	3	Spring	Application	
ECE 5740	Computer Architecture	4	Fall	Application	
ECE 5730	Digital Systems Design Using Microcontrollers	4	Fall	Application	
ECE 5210	Network Systems and Games	3	Spring	Modeling & Analysis	
ECE 5725	Design with Embedded Operating Systems	4	Fall, spring	Application	

ECE 5750	Advanced Computer Architecture	4	Fall	Application	
ECE 5760	Advance Microcontroller Design	4	Fall	Application	

ECE 5830	Introduction to Technical Management	3	Fall	Management	
ECE 5880	Energy Seminar II	1	Spring	Seminar	

MAE Courses	Course Name	Credits	Semester	Group	Comments
MAE 5020	Wind Power	3	~~Fall~~	~~Application~~	
MAE 5065	Introduction to Spaceflight Mechanics	3	Fall	Application	
MAE 5160	Spacecraft Technology and Systems Architecture	4	Spring	Application	
MAE 5230	Intermediate Fluid Dynamics	4	Spring	Application	
MAE 5340	Innovative Product Design via Digital Manufacturing	3	Fall	Application	
MAE 5510	Aerospace Propulsion	3	Spring	Application	
ECE 5840	Introduction to Controlled Fusion: Principles and Technology	3	Spring	Application	
ENGRG 5330	Entrepreneurship For Engineers	3	Spring	Application	
MAE 5700	Finite Element Analysis for Mechanical and Aerospace Design	3	Fall	Modeling & Analysis	
MAE 5730	Intermediate Dynamics and Vibrations	3	Fall	Modeling & Analysis	
MAE 5780	Feedback Control Systems	4	Fall	Modeling & Analysis	
MAE 5860	Automotive Engineering	3	Spring	Modeling & Analysis	

MAE 5120	3D Printing Parts that Don't Break: From Processing to Performance	4	Spring	Application	
MAE 5010	Future Energy Systems	3	Spring	Application	
MAE 5180	Autonomous Mobile Robots	4	Spring	Application	

MAE 5459	Energy Seminar I	1	Fall	Seminar	
MAE 5469	Energy Seminar II	1	Spring	Seminar	
MAE 5770	Engineering Vibrations	3	Spring		
MAE 5790	Non-Linear Dynamics and Chaos	4	Spring	Modeling & Analysis	
MAE 5780	Feedback Control Systems	3	Fall	Modeling & Analysis	
MAE 5949	Enterprise Engineering Colloquium	1	Spring	Seminar	
MAE 6230	Computational Fluid Dynamics	4	Spring	Modeling & Analysis	
MAE 6310	Turbulence and Turbulent Flows	4	Spring	Modeling & Analysis	
MAE 6510	Advanced Heat Transfer	4	Spring	Application	
MAE 6730	Introduction to Robotic Mobile Manipulation	4	Spring	Application	
MAE 6760	Model-Based Estimation	4	Fall	Modeling & Analysis	
MAE 6780	Multivariable Control Theory	4	Spring	Modeling & Analysis	
MAE 6800	Advanced Dynamics Design for Manufacture and Assembly	3	Spring		Next offered 2022-2023

MAE 5260	Polymer Mechanics	1	Spring	Application	
MAE 5670	Polymer Mechanics	3	Spring		

MAE 6810	Methods of Applied Mathematics I	3	Fall	Application	

ORIE Courses	Course Name	Credits		Semester	Group	Comments
ORIE 5630	Operation Research Tools for Financial Engineering	4	–	Fall	Application	
ORIE 5126	Principles of Supply Chain Management	4		Spring	Application	
ORIE 5270	Big Data Technologies	4		Spring	Application	
ORIE 5310	Optimization II	4		Spring	Modeling & Analysis	
ORIE 5370	Optiminization Modeling in Finance	3		Spring	Application	
ORIE 5510, ORIE 3510	Introduction to Engineering Stochastic Processes I	4		Spring	Modeling & Analysis	
ORIE 5582	Monte Carlo Methods in Financial Engineering	2		Spring wks 8-14	Application	
~~ORIE 6580~~	~~Simulation~~	4	–	~~Spring~~	~~Modeling & Analysis~~	~~Next offered: 2019-20 20~~
ORIE 5581, ORIE 5580, ORIE 4580	Monte Carlo Simulation	2		Fall wks 1-7	Modeling & Analysis	
~~ORIE 4152, ENGRG 4610, MAE 4610~~	~~Entrepreneurship For Engineers~~	3	–	~~Spring~~	~~Management~~	
~~ORIE 5330~~	~~Discrete Models~~	4	–	~~Fall~~	~~Modeling & Analysis~~	
~~ORIE 4350~~	~~Introduction To Game Theory~~	4	–	~~Fall~~	~~Modeling & Analysis~~	

ORIE 5580	Simulation Modeling and Analysis	4		Fall	Modeling & Analysis	
~~ORIE 5741~~	~~Learning with Big Messy Data~~	4		~~Fall~~	~~Modeling & Analysis~~	~~Next offered: 2019-202 – 0~~
ORIE 5100	Design of Manufacturing Systems	4		Fall	Application	
ORIE 5230	Quantitative Trading Strategies	3		Fall	Application	

ORIE 5240	Bond Mathematics and Mortgage-Back Securities	3	Fall	Application	
ORIE 5300	Operations Research I: Optimization I	4	Fall	Modeling & Analysis	

ORIE 5500	Engineering Probability and Statistics II	4	Fall	Modeling & Analysis	
ORIE 5530	Modeling Under Uncertainty	3	Fall	Modeling & Analysis	
ORIE 5550	Applied Time-Series Analysis	4	Spring	Modeling & Analysis	
ORIE 5580	Simulation Modeling and Analysis	4	Fall	Modeling & Analysis	
ORIE 6500	Applied Stochastic Processes	4	Fall, Spring	Modeling & Analysis	

Updated 2/28/2024

SYSEN Courses					
SYSEN 6100	Systems Seminar Series	1	Fall, spring	Seminar	
SYSEN 5220, SYSEN 6220	Systems Dynamics	3	Fall	Application	
SYSEN 5300, SYSEN 6300, MAE 5930	Systems Engineering and Six Sigma for the Design and Operation of Reliable Systems	3-4	Fall	Application or Modeling & Analysis	
SYSEN 5400, MAE 5950, SYSEN 6400	Theory and Practice of Systems Architecture	3	Spring	Application or Modeling & Analysis	
SYSEN 5500	SysML	3	Spring	Application or Modeling & Analysis	
SYSEN 5800	Computational Optimization	4	Fall	Application or Modeling &	

				Analysis	
SYSEN 5880	Industrial Big Data Analytics and Machine Learning	4	Spring	Application or Modeling & Analysis	
SYSEN 6800	Computational Optimization	4	Fall, Spring	Application or Modeling & Analysis	

SYSEN 6880	Industrial Big Data Analytics and Machine Learning	4	Spring	Application or Modeling & Analysis	
SYSEN 5180	Sociotechnical Systems and Policy	3	Fall	Modeling & Analysis	
SYSEN 5190	Project Management of Complex Systems	3	Fall	Application	
SYSEN 5240	Search and Optimization with Metaheuristics	3	Summers	Modeling & Analysis	
SYSEN 5500	SysML	2	Spring	Application or Modeling & Analysis	
SYSEN 5740	Design Thinking for Complex Systems	2	Spring	Application	
SYSEN 6800	Computational Optimization	4	Fall, Spring	Application or Modeling & Analysis	
SYSEN 5170	Energy Policies for Systems Transition	3	Spring	Application	
SYSEN 5250	Systems Integration, Verification, and Validation	3	Spring	Application	
SYSEN 5260	Software Systems Engineering/ Learn How software is designed, developed, and delivered in the modern enterprise	3	Fall	Application	
SYSEN 5270	Sociotechnical Systems Modeling and Simulation	3	Spring	Application	
SYSEN 5140	Economic and Financial Decisions for Engineers	3	Spring	Management	

Other Courses	Course Name	Credits	Semester	Group	
AEM 6061	Risk Simulation and Montre Carlo	3	Spring	Application	
~~ASTRO 4445, PHYS 4445~~	~~Introduction to General Relativity~~	4	~~Fall~~	~~Application~~	
EAS 4010, EAS 5010	Fundamentals of Enrgy and Mineral Resourses Fundamentals of Database Management and Data	3	Spring	Modeling & Analysis/ Application	
HADM 6740	Analysis	3	Spring	Application	

NBA 5070	Entrepreneurship For Scientists & Engineers	3	Fall, spring	Management	
NBA 5150	Leadership Theory and Practice	3	Fall, spring	Management	
NBA 5380	The Business Idea Factory	1.5	Fall, Spring	Management	
NBA 5530	Accounting and Financial Decision Making	3	Spring	Management	

NBA 5640	Entrepreneurship and Business Ownership	3	Fall, Spring	Management	
NBA 6390	Data-Driven Marketing	1.5	Fall	Management	
NBA 6630	Managerial Decision Making	3	Fall	Management	
NBA 6650	Managing Technology and Innovation	3	Spring, Summer	Management	
NBA 6910	Physical Product Entrepreneurship	1.5	Spring	Management	
ILROB 5200	Organizational Behavior and Analysis	3	Fall, Spring	Management	
INFO 5355	Human Computer Interaction Design	4	Fall, Spring, Summer	Application	
INFO 6220, CS 4852, ECON 3825, INFO 4		3	Spring	Modeling & Analysis	
INFO 4400, COMM 4400	~~Advanced Human Computer Interactive Design~~	3	~~Spring~~	~~Application~~	
NCC 5500	Financial Accounting	3	Fall, Spring	Management	
NCC 5560	Managerial Finance	3	Fall, spring	Management	
ENMGT 5930	Data Anaylytics and Product Management	4	Fall		
ENMGT 5920		3	Spring	Management	
NCC 5090	Strategy	2.5	Summer, Fall	Management	
STSCI 5740	Data Mining and Machine Learning	4	Fall		
STSCI 5040	R Programming for Data Science Structures and Materials for Sustainable Energy	4	Fall	Modeling & Analysis	
MSE 5150	Systems	3	Spring	Modeling & Analysis	

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Core Courses

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SYSEN 5100, CEE 5240, ECE 5120, MAE 5910, ORIE 5140	Model Based Systems Engineering	3	Fall	Core
SYSEN 5200, CEE 5252, MAE 5920, ORIE 5142	Systems Analysis Behavior and Optimization	3	Spring	Core
CEE 5900	Project Management	4	Fall or Spring	Core
SYSEN 5900, SYSEN 5700	Systems Engineering Project	6 to 8	Fall and Spring	Core

Course Department	Course Name	Credits	Semester	Group
ASTRO 4431	Introduction to Astrophysics and Space Sciences I	4	Fall	Application
ASTRO 4433	Introduction to Cosmology	4	Fall	Application
ASTRO 4445	Introduction to General Relativity	4	Fall	Application
ASTRO 6509	General Relativity	4	Fall	Application
ASTRO 6560	Theory of Stellar Structure and Evolution	4	Fall	Application
ASTRO 6575	Planetary Atmospheres	4	Fall	Application
BEE 4590	Biosensors and Bioanalytical Techniques	3	Fall	Application

CEE 6210	Stochastic Hydrology	3	Fall	Application
CS 4420, ECE 4750	Computer Architecture	4	Fall	Application
CS 4744	Computational Linguistics	4	Fall	Application
CS 5150	Software Engineering	4	Fall	Application
CS 5413	High Performance Systems and Networking	4	Fall	Application
CS 5420	Advanced Computer Architecture	4	Fall	Application
CS 5660	Signal Processing	3	Fall	Application
CS 5780	Machine Learning for Intelligent Systems	4	Fall	Application
CS 5830	Cryptography	4	Fall	Application
CS 5860	Introduction to Formal Methods	4	Fall	Application
ECE 4130	Introduction to Nuclear Science and Engineering	3	Fall	Application

Pre-Approved Electives by Group

ECE 4271	Evolutionary Processes, Evolutionary Algorithms, Evolutionary Games	3	Fall	Application
ECE 4450	Computer Networks and Telecom	4	Fall	Application
ECE 4750	Computer Architecture	4	Fall	Application
ECE 4760	Digital Systems Design Using Microcontrollers	4	Fall	Application
ECE 4800	Optimal Systems Analysis and Design	4	Fall	Application
ECE 5370	Computer Vision	4	Fall	Application

Updated 1.3.17

ECE 5750	Advanced Computer Architecture	4	Fall	Application
ECE 5775	High-Level Digital Design Automation	4	Fall	Application
MAE 5020	Wind Power	3	Fall	Application
MAE 5065	Introduction to Spaceflight Mechanics	3	Fall	Application
~~MAE 4130, MAE 4131~~	~~Mechanics of Composite Structures~~	~~3 to 4~~	~~Fall~~	~~Application~~
MAE 5340	Innovative Product Design via Digital Manufacturing	4	Fall	Application
~~MAE 4580~~	~~Introduction to Nuclear Science and Engineering~~	– 3	~~Fall~~	~~Application~~
~~MAE 4660~~	~~Biomedical Engineering Analysis of Metabolic and Structural Systems~~	– 3	~~Fall~~	~~Application~~
MAE 5430	Combustion Processes	3	Fall	Application
MAE 5680	Soft Tissue Biomechanics	3	Fall	Application
MAE 6240	Physics of Micro and Nanoscale Fluid Mechanics	4	Fall	Application
MAE 6480	Air Quality and Atmospheric Chemistry	3	Fall	Application
MAE 6510	Advanced Heat Transfer	4	Fall	Application
MAE 6790	Intelligent Sensor Planning and Control	3	Fall	Application
MAE 6810	Methods of Applied Mathematics I	3	Fall	Application
~~ORIE 4600~~	~~Introduction to Financial Engineering~~	– 3	~~Fall~~	~~Application~~
~~ORIE 4800~~	~~Information Technology~~	– 4	~~Fall~~	~~Application~~
ORIE 5100	Design of Manufacturing Systems	4	Fall	Application
ORIE 5230	Quantitative Trading Strategies	3	Fall	Application

ORIE 5240	Bond Mathematics and Mortgage-Back Securities	3	Fall	Application

SYSEN 5220	Systems Dynamics	3	Fall	Application
~~BEE 4870~~	~~Sustainable Bioenergy Systems~~	~~3~~	~~Fall (alt years)~~	~~Application~~
CEE 6920	Special Topics in Engineering Management	3	Fall, Spring	Application
CS 5320	Introduction to Database Systems	3	Fall, Spring	Application
CS 5434	Defending Computer Networks	4	Fall, Spring	Application
CS 5450	Computer Networking	3 to 4	Fall, Spring	Application
~~ASTRO 4432~~	~~Introduction to Astrophysics and Space Sciences II~~	~~4~~	~~Spring~~	~~Application~~
ASTRO 6511	Physics of Black Holes, White Dwarfs and Neutron Stars	4	Spring	Application

ASTRO 6516	Calactic Structure and Stellar Dynamics	4	Spring	Application
ASTRO 6578	Planet Formation and Evolution	4	Spring	Application
ASTRO 7690	Computational Physics	3	Spring	Application
~~BEE 4010~~	~~Renewable Energy Systems~~	~~3~~	~~Spring~~	~~Application~~
~~BEE 4500~~	~~Bioinstrumentation~~	~~3 to 4~~	~~Spring~~	~~Application~~
~~BEE 4710~~	~~Introduction to Groundwater~~	~~3~~	~~Spring~~	~~Application~~
~~BEE 4740~~	~~Water and Landscape Engineering Application~~	~~3~~	~~Spring~~	~~Application~~
~~BEE 4760~~	~~Solid Waste Engineering~~	~~3~~	~~Spring~~	~~Application~~
~~BEE 4800~~	~~Our Changing Atmosphere: Global Change and Atmospheric Chemistry~~	~~3~~	~~Spring~~	~~Application~~
BEE 6550	Biologically Inspired Microsystems Engineering	2 to 3	Spring	Application
BEE 6740	Ecohydrology	3	Spring	Application
BEE 7540	Water Management in an Era of Growing Water Scarcity	2 to 3	Spring	Application
CEE 5970	Risk Analysis and Management	3	Spring	Application

CEE 6200	Water Resource Systems Engineering	3	Spring	Application
CEE 6750	Concrete Materials and Construction	3	Spring	Application
CHEME 4700	Process Control Strategies	3	Spring	Application
CHEME 6610	Air Pollution Control	3	Spring	Application
~~CS 4758~~	~~Robot Learning~~	~~4~~	~~Spring~~	~~Application~~
CS 5152	Open-Source Software Engineering	4	Spring	Application
CS 5232	Physical Computing	4	Spring	Application
CS 5300, INFO 5300	The Architecture of Large-Scale Information Systems	4	Spring	Application
CS 5412	Cloud Computing	4	Spring	Application
CS 5430	System Security	4	Spring	Application
CS 5670	Introduction to Computer Vision	4	Spring	Application
CS 5752	Robotic Manipulation	4	Spring	Application
CS 5840	Algorithms for Markets	4	Spring	Application
~~ECE 4758~~	~~Robot Learning~~	~~4~~	~~Spring~~	~~Application~~

ECE 5660	Fundementals of Networks	4	Spring	Application
ECE 5760	Advance Microcontroller Design	4	Spring	Application
ECE 5770	Resilient Computer Systems	4	Spring	Application
INFO 4400	Advanced Human Computer Interactive Design	3	Spring	Application
~~MAE 4120, MAE 4121~~	~~Community Wind Energy Research~~	~~3 to 4~~	~~Spring~~	~~Application~~
MAE 5160	Spacecraft Technology and Systems Architecture	4	Spring	Application
MAE 5230	Intermediate Fluid Dynamics	4	Spring	Application

~~MAE 4320~~	~~Micro & Nano Sensors & Systems: Bridging the Physical & Digital Worlds~~	~~4~~	~~Spring~~	~~Application~~
MAE 5510	Aerospace Propulsion	3	Spring	Application
MAE 5560	Bioastronautics and Human Performance	3	Spring	Application

~~MAE 4590~~	~~Introduction to Controlled Fusion: Principles and Technology~~	~~3~~	~~Spring~~	~~Application~~

MAE 4640, MAE 4641, MAE 5640	Orthopedic Tissue Mechanics	3 to 4	Spring	Application
MAE 4650, MAE 4651, MAE 5650	Biofluid Mechanics	3 to 4	Spring	Application
MAE 4860, MAE 4861, MAE 5860	Automotive Engineering	3 to 4	Spring	Application
MAE 5010	Future Energy Systems	3	Spring	Application
MAE 5070	Dynamics of Flight Vehicles	3	Spring	Application
MAE 5130	Mechanical Properties of Thin Films	3	Spring	Application
MAE 5180	Autonomous Mobile Robots	4	Spring	Application
MAE 6160	Advanced Composite Materials	4	Spring	Application
MAE 6620	Biomedical Technologies for Point-of-Care Diagnostics & Global Health	3	Spring	Application
MAE 6650	Principles of Tissue Engineering	3	Spring	Application
MAE 6680	Cancer for Engineers and Physicists	3	Spring	Application
MAE 6730	Introduction to Robotic Mobile Manipulation	4	Spring	Application
MAE 7070	Professional Product Design Studio	3	Spring	Application
ORIE 4154	Revenue Optimization and Marketplace Design	3	Spring	Application
ORIE 4360	A Mathematical Examination of Fair Representation	3	Spring	Application
ORIE 4630	Operation Research Tools for Financial Engineering	3	Spring	Application
ORIE 5122	Inventory Management	3	Spring	Application
ORIE 5126	Principles of Supply Chain Management	3	Spring	Application
ORIE 5130	Service System Modeling and Design	3	Spring	Application
ORIE 5260	Machine Learning for Finance	4	Spring	Application
ORIE 5270	Big Data Technologies	4	Spring	Application
ORIE 5370	Optiminization Modeling in Finance	3	Spring	Application
SYSEN 5500	SysML	3	Spring	Application or Modeling & Analysis
SYSEN 5740	Design Thinking for Complex Systems	2	Spring	Application
BEE 4350	Principles of Aquaculture	3	Spring	Application

ORIE 5280	Financial Data Practicum	3	Spring	Application
~~ORIE 4710~~	~~Applied Linear Statistical Models~~	~~2~~	~~Spring wks 1-7~~	~~Application~~
~~ORIE 4711~~	~~Experimental Design~~	~~2~~	~~Spring wks 8-14~~	~~Application~~
ORIE 5582	Monte Carlo Methods in Financial Engineering	2	Spring wks 8-14	Application
SYSEN 5300, MAE 5930	Systems Engineering and Six Sigma for the Design and Operation of Reliable	3 or 4	Fall	Application or Modeling & Analysis
SYSEN 5400	Theory and Practice of Systems Architecture	3	Fall	Application or Modeling & Analysis

~~BEE 4890~~	~~Entrepreneurial Management for Engineers~~		~~Fall~~	~~Management~~
BEE 5400	Engineering Ethics and Professional Practice		Fall	Management
CEE 5930	Engineering Management Methods		Fall	Management
CEE 5950	Construction Planning and Operations		Fall	Management
CEE 5980	Introduction to Decision Analysis		Fall	Management
CHEME 5720	Managing Business Development Solutions		Fall	Management
ECE 5830	Introduction to Technical Management		Fall	Management
HADM 7110	Organizational Behavior		Fall	Management
ILROB 7240	The Psychology of Creativity		Fall	Management
ILROB 7780, SOC 7780	Solidarity in Groups		Fall	Management
NBA 5380	The Business Idea Factory	1	Fall	Management
NBA 5640	Entrepreneurship and Business Ownership		Fall	Management

NBA 6630	Managerial Decision Making	3	Fall	Management
NBA 6660	Negotiations	3	Fall	Management
~~ORIE 4152, EngrG 4610, MAE 4610~~	~~Entrepreneurship For Engineers~~	~~3~~	~~Fall~~	~~Management~~

NBA 5070	Entrepreneurship For Scientists & Engineers	3	Fall and Spring	Management
NBA 5150	Leadership Theory and Practice	3	Fall and Spring	Management
NCC 5090	Business Strategy	3	Fall and Spring	Management
NCC 5560	Managerial Finance	3	Fall and Spring	Management
NCC 5580	Managing Operations	3	Fall and Spring	Management
ILROB 5200	Organizational Behavior and Analysis	3	Fall or Spring	Management
BEE 5330	Engineering Professionalism	1	Spring	Management
~~ILROB 4230~~	~~Leadership in Organizations~~	~~4~~	~~Spring~~	~~Management~~
~~MAE 4610, EngrG 4610, ORIE 4152~~	~~Entrepreneurship For Engineers~~	~~3~~	~~Spring~~	~~Management~~
NBA 5530	Accounting and Financial Decision Making	3	Spring	Management
NBA 6390	Data-Driven Marketing	3	Spring	Management
NBA 6650	Managing Technology and Innovation	3	Spring	Management
NBA 6910	Physical Product Entrepreneurship	1.5	Spring	Management
NCC 5500	Financial Accounting	3	Spring	Management
~~BEE 4600~~	~~Deterministic and Stochastic Modeling in Biological Systems~~	~~3~~	~~Fall~~	~~Modeling & Analysis~~
CEE 5290, CS 5722, ORIE 5340	Heuristic Methods for Optimization	3 to 4	Fall	Modeling & Analysis
CEE 6620	Urban Transportation Network Design and Analysis	3	Fall	Modeling & Analysis

CEE 6640	Microeconometrics of Discrete Choice	3	Fall	Modeling & Analysis
CEE 6790	Time Series Data Analysis for Civil, Mechanical & Geophysical Applications	3	Fall	Modeling & Analysis
~~CHEME 6640~~	~~Energy Economics~~	~~3~~	~~Fall~~	~~Modeling & Analysis~~
CHEME 6660	Analysis of Sustainable Energy Systems	3	Fall	Modeling & Analysis
CHEME 6800, SYSEN 6800	Computational Optimization	4	Fall	Modeling & Analysis
CS 5761	Hybrid Systems	4	Fall	Modeling & Analysis
CS 5846	Decision Theory I	4	Fall	Modeling & Analysis

ECE 5210	Theory of Linear Systems	4	Fall	Modeling & Analysis
ECE 5555	Stochastic Systems: Estimation and Control	4	Fall	Modeling & Analysis
MAE 5700	Finite Element Analysis for Mechanical and Aerospace Design	4	Fall	Modeling & Analysis
MAE 5730	Intermediate Dynamics and Vibrations	3	Fall	Modeling & Analysis
MAE 5780	Feedback Control Systems	3-4	Fall	Modeling & Analysis
~~ORIE 4300~~	~~Optimization Modeling~~	~~3~~	~~Fall~~	Modeling & Analysis
~~ORIE 4320~~	~~Nonlinear Optimization~~	~~4~~	~~Fall~~	Modeling & Analysis
~~ORIE 4330~~	~~Discrete Models~~	~~4~~	~~Fall~~	Modeling & Analysis
ORIE 5350	Introduction To Game Theory	4	Fall	Modeling & Analysis
~~ORIE 4520~~	~~Introduction to Engineering Stochastic Processes II~~	~~4~~	~~Fall~~	~~Modeling & Analysis~~
ORIE 5580	Simulation Modeling and Analysis	4	Fall	Modeling & Analysis
~~ORIE 4740~~	~~Statistical Data Mining~~	~~3~~	~~Fall~~	~~Modeling & Analysis~~
~~ORIE 4741~~	~~Learning with Big Messy Data~~	~~4~~	~~Fall~~	~~Modeling & Analysis~~
ORIE 5300	Operations Research I: Optimization I	4	Fall	Modeling & Analysis
ORIE 5340, CS 5722, CEE 5290	Heuristic Methods for Optimization	3 to 4	Fall	Modeling & Analysis
ORIE 5500	Engineering Probability and Statistics II	4	Fall	Modeling & Analysis
ORIE 5520	Introduction to Engineering Stochastic Processes II	4	Fall	Modeling & Analysis
ORIE 5530	Modeling Under Uncertainty	3	Fall	Modeling & Analysis
ORIE 5550	Applied Time-Series Analysis	3	Fall	Modeling & Analysis
ORIE 5580	Simulation Modeling and Analysis	4	Fall	Modeling & Analysis
ORIE 6330	Graph Theory and Nework Flows	3	Fall	Modeling & Analysis
ORIE 6500	Applied Stochastic Processes	4	Fall	Modeling & Analysis
ORIE 5581	Monte Carlo Simulation	2	Fall wks 1-7	Modeling & Analysis
~~BEE 4530~~	~~CAE: Applications to Biological Processes~~	~~3~~	~~Spring~~	~~Modeling & Analysis~~
BEE 6880	Applied Modeling and Simulation for Renewable Energy Systems	3	Spring	Modeling & Analysis
CS 5223	Numerical Analysis : Linear and Non-linear Problems	4	Spring	Modeling & Analysis

CS 5820	Introduction to Analysis of Algorithms	4	Spring	Modeling & Analysis

CS 5722, CEE 5290, ORIE 5340	Heuristic Methods for Optimization	3 to 4	Spring	Modeling & Analysis
~~ECE 4730~~	~~Digital Feedback Controls~~	— 4	~~Spring~~	~~Modeling & Analysis~~
ECE 5220	Nonlinear Systems	4	Spring	Modeling & Analysis
INFO 6220	Networks II: Market Design	3	Spring	Modeling & Analysis
MAE 5790	Non-Linear Dynamics and Chaos	4	Spring	Modeling & Analysis
MAE 6140	State Variable Modeling	4	Spring	Modeling & Analysis
MAE 6230	Computational Fluid Dynamics	4	Spring	Modeling & Analysis
MAE 6310	Turbulence and Turbulent Flows	4	Spring	Modeling & Analysis
MAE 6700	Advanced Dynamics	3	Spring	Modeling & Analysis
MAE 6780	Multivariable Control Theory	4	Spring	Modeling & Analysis
MAE 6820	Methods of Applied Mathematics II	3	Spring	Modeling & Analysis
~~ORIE 4820~~	~~Spreadsheet-Based Modeling and Data Analysis~~	— 3	~~Spring~~	~~Modeling & Analysis~~
~~ORIE 5150, ORIE 4150~~	~~Economic Analysis of Engineering Systems~~	— 4	~~Spring~~	~~Modeling & Analysis~~
~~ORIE 5310~~	~~Optimization II~~	— 4	~~Spring~~	~~Modeling & Analysis~~
ORIE 5380	Optiminization Methods	3	Spring	Modeling & Analysis
~~ORIE 5510~~	~~Introduction to Engineering Stochastic Processes I~~	— 4	~~Spring~~	~~Modeling & Analysis~~
ORIE 5650	Quantitative Methods of Financial Risk Management	3	Spring	Modeling & Analysis
~~ORIE 6180~~	~~The Design of Online Marketplaces~~	— 3	~~Spring~~	~~Modeling & Analysis~~
~~ORIE 6350~~	~~Foundations of Game Theory and Mechanism Design~~	— 3	~~Spring~~	~~Modeling & Analysis~~
~~ORIE 6580~~	~~Simulation~~	— 4	~~Spring~~	~~Modeling & Analysis~~
~~ORIE 4712~~	~~Regression~~	— 2	~~Spring wks 8-14~~	~~Modeling & Analysis~~
SYSEN 5240	Search and Optimization with Metaheuristics	3	Alternate	Modeling & Analysis

ECE 5870	Energy Seminar I	1	Fall	Seminar
MAE 5459	Energy Seminar I	1	Fall	Seminar
SYSEN 6100	Systems Seminar Series	1	Fall, Spring	Seminar
ECE 5880	Energy Seminar II	1	Spring	Seminar
MAE 5469	Energy Seminar II	1	Spring	Seminar
MAE 5949	Enterprise Engineering Colloquium	1	Spring	Seminar