USC Viterbi
School of Engineering
Daniel J. Epstein Department of Industrial and Systems Engineering

www.ise.usc.edu

ISE
Master's Program Handbook
2025 – 2026

TABLE OF CONTENTS

Disclaimer

This handbook is produced by the Daniel J. Epstein Department of Industrial and Systems Engineering (ISE) as an unofficial guide to graduate studies in the department. The source for much of the information in this booklet is the *USC Catalogue*, the document of authority for all students at the University of Southern California. Degree requirements listed in the *USC Catalogue* supersede any information which may be contained in any bulletin of any school or department. The *USC Catalogue* is updated and published annually by the University of Southern California.

Although the University of Southern California, the Viterbi School of Engineering, and the Daniel J. Epstein Department of Industrial and Systems Engineering have many resources to help each student achieve his/her desired education and training goals, it is ultimately the student's responsibility to see that all requirements for graduation are satisfied.

"Students are expected to be familiar with university policies and to monitor their own academic progress. They should keep all records of official grades earned, degree requirements met, transfer credits accepted, and actions taken on requests for substitutions or exceptions to university policies and regulations." -- USC Catalog

For additional information on USC or the Daniel J. Epstein Department of Industrial and Systems Engineering, go to https://ise.usc.edu/

DANIEL J. EPSTEIN DEPARTMENT OF INDUSTRIAL AND SYSTEMS ENGINEERING

In today's economy, successful graduates need to be skilled in technology, computing and business. To obtain these skills, there is no better major than Industrial and Systems Engineering (ISE), and there is no better place to study Industrial and Systems Engineering than at the University of Southern California (USC).

USC graduates:

- Design and implement information systems to control supply chains, production equipment and business operations.
- Lead development projects for computers, software, communication equipment and biotech devices
- Manage technology workers in design firms, manufacturers, and service organizations, such as hospitals and airlines.
- Create human/computer interfaces and invent technology to meet human needs.

A graduate degree from USC's ISE Department enables students to enter careers in technology management, information systems, consulting, automation and optimization.

Why USC
Students come to USC because of our academics and innovative programs, but we also offer:

- Outstanding, well-paid career opportunities in California's high-tech economy.
- Personal contact with top-ranked faculty, who are both world-renowned researchers and experienced engineers.
- A modern and challenging curriculum emphasizing information technology.
- Top students who are attracted to Los Angeles' international economy from around the world.
- A range of degree and course options at the graduate level, with choices for students coming from any engineering or technical major.

Students also select USC because of its leadership in ISE research. Our faculty works with the National Science Foundation, the Integrated Media Systems Center (based at USC) and private companies, to stay at the forefront of innovation in software, control systems and engineering management.

USC's research leadership is reflected in our faculty's membership in the prestigious National Academy of Engineering, publications in leading journals and patents for innovative computer-based technologies.

GRADUATE DEGREES OFFERED

Master of Science in Analytics is a program designed to satisfy the growing demand for professionals equipped with significant training in the fundamentals of analytics for solving engineering and management problems in today's data-driven world. Analytics is a multidisciplinary field that applies data analysis to engineering management and enterprise processes.

Master of Science in Engineering Management is a program that prepares students to lead technology projects and manage technology-driven organizations and companies delivering a wide array of goods and services. The degree is especially well suited for students who have several years of work experience and are preparing to move into engineering management.

Master of Science in Health Systems Management Engineering is for students who are interested in operations management and healthcare applications, and whose career objectives lead to increasing technical management responsibilities in large healthcare organizations, particularly hospitals.

Master of Science in Industrial and Systems Engineering prepares students to become technical leaders in industrial engineering by using qualitative and quantitative techniques to improve systems. The ISE program prepares students to become skilled experts, managers, decision makers and researchers for design and optimization in complex and uncertain environments. The ISE Department's research and education benefit society through novel systems for healthcare, manufacturing, transportation and logistics, security, e-commerce, and the environment.

Master of Science in Operations Research Engineering trains students in solving business problems with computers and mathematics. This program prepares students to build mathematical models and algorithms to make decisions.

Master of Science in Product Development Engineering is a joint program with the Aerospace and Mechanical Engineering Department that prepares engineers to become leaders in engineering design and new product development. Students will choose either the Management Specialization or Technology Specialization.

Doctor of Philosophy (Ph.D.)
The Ph.D. program prepares students for leadership in Industrial and Systems Engineering research and university-level education. In addition to meeting course requirements, students spend one or more years on Ph.D. dissertation research. Policies for the Ph.D. are described in a separate publication available from the department.

Ph.D. applications are individually reviewed by faculty, who consider academic preparation, grade point average, test scores, work experience, statements of purpose and letters of recommendation. Applicants must generally meet the minimum standards, though satisfaction of these standards does not guarantee admission. However, conditional admission is sometimes granted when students are deficient in one area but compensate in others. Therefore, students are still encouraged to apply if some, but not all, qualifications are satisfied.

For more information, please go to https://gradadm.usc.edu/our-programs/viterbi-school-of-engineering/

FINANCIAL AID

Financial assistance is administered on various levels at USC:

University Level (via The Graduate School). The Graduate School publishes the *Resources for Graduate Students*. Fellowships are available. The completed Graduate Fellowship Application Form should be returned to the Department for processing. The Graduate School also accepts department nominations for scholarships.

School Level (via the Viterbi School of Engineering). The Dean and the Director of Graduate Studies of the School of Engineering review information from University Admissions to make awards to qualified candidates.

Graduate School aid and Viterbi School of Engineering aid are primarily awarded to American citizens. Applicants interested in financial assistance should have qualifications well beyond the minimum requirements for admission.

ACADEMIC POLICIES

Advisement
All graduate students in the ISE Department are expected to meet with their advisors at least once per semester to review course plans and to ensure satisfactory degree progress.

Course Requirements
All students should refer to the USC Catalog for their course requirements. Please make sure you are looking at the Catalog for the year you were admitted to the program. Past catalog years may have different requirements which do not apply to your catalog year.

Condition of Admission
Students should successfully complete their conditions of admission as soon as possible in their course of study to prevent registration holds and progress delays.

Transfer Credit
The faculty of a degree program may establish limits on the number of transfer credits that are stricter than those of the university, which are as follows:

- Courses used toward a degree completed elsewhere may not be applied toward a master's degree at USC.
- If courses were not used toward a completed degree, the maximum number of transfer credits that may be applied towards a 28-unit master's degree, subject to departmental approval, is 4 units. Students should arrange for any transfer of credits during the first semester of enrollment at USC.

Limited Status Enrollment
A maximum of 12 units of courses taken as a Limited Status Student may be applied to a degree.

Time Limit
No coursework that is older than seven years may be applied toward a master's degree. The master's degree must be completed within five years of taking the first course applied to the program.

Residency
Students must complete a minimum of 20 units at USC. The last four units of courses must be taken at USC.

Grade Point Average Requirement
Students must maintain an overall 3.0 GPA on 400-level and above work attempted at USC beyond the bachelor's degree to graduate. A minimum grade of C (2.0) is required in a course to receive graduate credit. Transfer units count as credit (CR) and are not calculated in the GPA.

Graduation

Students should submit an application to graduate in the myViterbi portal. (The department will email the instructions each semester.) This will alert the School and the University that you are initiating the degree check process, verifying that all academic and administrative requirements are met.

Leave of Absence

A student who must suspend his/her studies for a semester or more must file for a leave of absence with the ISE Department. Students should contact their advisor and withdraw from classes before the last day to drop classes without a mark of W (published in the Schedule of Classes). Students who miss the deadline for a leave of absence may still withdraw from classes with a mark of W but must apply for readmission to the program.

ACADEMIC HONORS

Academic Awards

The Department and the Viterbi School of Engineering may, from time to time, nominate students for awards and scholarships. If you feel you may qualify for any award or recognition based on academic performance, leadership, extracurricular activities, or any combination of the above, please let the department know. We are always happy to give students the recognition they deserve.

STUDENT ORGANIZATIONS

To build character and leadership skills, and to acknowledge academic achievement, the ISE Department supports the activities of student organizations which are run by ISE students to further academic and professional goals. Each organization has an ISE faculty or staff member as an advisor. The quality of each of these organizations is directly affected by the quality of its student members, and particularly its officers. Your active participation is, therefore, encouraged.

Student Chapter of the Institute of Industrial Engineers
The Institute of Industrial Engineers is a professional organization for industrial engineers. Its mission is to promote and foster industrial engineering as a profession. Reduced membership dues are available to student members.

Alpha Pi Mu
Alpha Pi Mu is an industrial engineering honors society. Its purpose is to recognize high academic achievement by juniors, seniors, and graduate students in industrial engineering. Membership is by invitation only.

Engineering Management Student Association EMSA
EMSA was established in 2012 to increase the interaction between industry, alumni, students, and professors. The organization is free to all USC students.

Omega Rho
Omega Rho is the operations research honors society. Its purpose is to recognize high academic achievement by undergraduate and graduate students in operations research. Membership is by invitation only.

INFORMS
The INFORMS USC Student Chapter is a graduate student-run organization located at the department of Industrial and Systems Engineering. Our goal is to provide the operations research and management science community at USC support through regular events, including student presentations, journal clubs, distinguished speakers, and coffee hours. Please contact us if you're interested in giving a talk, developing a workshop or joining our chapter.

Industrial and Systems Engineering Analytics Student Association (IASA)
IASA is a student organization created for USC's Analytics program. IASA promotes connection, growth, and collaboration among students, alumni, and faculty through a variety of academic and professional development events. Membership is limited to students in the Analytics program.

MS ANALYTICS DEGREE REQUIREMENTS

Core Courses (12 units)

ISE 529 Predictive Analytics Units: 4
ISE 530 Optimization Methods for Analytics Units: 4
ISE 558 Fundamentals of Data Engineering Units: 4

Group A (4 units)

Select one course.

ISE 533 Integrative Analytics Units: 4
ISE 534 Data Analytics Consulting Units: 4
ISE 580 Performance Analysis with Simulation Units: 4 *

Group B (4 units)

Select one course.

ISE 525 Design of Experiments Units: 4
ISE 535 Data Mining Units: 4
ISE 537 Financial Analytics Units: 4
ISE 538 Markov Models for Performance Analysis Units: 4
ISE 540 Text Analytics Units: 4
ISE 543 Enterprise Business Intelligence and Systems Analytics Units: 4
ISE 562 Decision Analysis Units: 4
ISE 580 Performance Analysis with Simulation Units: 4 *

Note

*May count toward Group A or Group B but not both.

Advisor-approved Electives (8 units)

Total units: 28

MS ENGINEERING MANAGEMENT DEGREE REQUIREMENTS

Required Courses

ISE 500 Statistics for Engineering Managers Units: 4
ISE 515 Engineering Project Management Units: 4
ISE 544 Leading and Managing Engineering Teams Units: 4
ISE 561 Economic Analysis of Engineering Projects Units: 4

Technology Course

Select one:

CE 576 Invention and Technology Development Units: 3
ISE 445 Principles and Practices of Global Innovation Units: 4
ISE 501 Innovative Conceptual Design for New Product Development Units: 4
ISE 585 Strategic Management of Technology and Innovation Units: 4

Advisor-Approved electives (8 units)

Total units: 28

MS HEALTH SYSTEMS MANAGEMENT ENGINEERING DEGREE REQUIREMENTS

Required Courses (12 Units)

ISE 508 Health Care Operations Improvement Units: 4
ISE 509 Practicum in Health Care Systems Units: 4
PM 504 Quality in Health Care Units: 4

Health Systems electives (12 units)

ISE 503 Health Analytics Units: 4
ISE 504 Management of Change in Health Care Systems Units: 4
ISE 505 Modeling for Health Policy and Medical Decision Making Units: 4
ISE 506 Lean Operations Units: 4
ISE 515 Engineering Project Management Units: 4
ISE 544 Leading and Managing Engineering Teams Units: 4
ISE 561 Economic Analysis of Engineering Projects Units: 4
ISE 564 Organizational Performance Analysis Units: 4
ISE 570 Human Factors in Engineering Units: 4
ISE 580 Performance Analysis with Simulation Units: 4
PM 508 Health Service Delivery in the U.S. Units: 4

Advisor-Approved Electives (4 Units)

Total Units: 28

MS INDUSTRIAL AND SYSTEMS ENGINEERING DEGREE REQUIREMENTS

Required Courses (12 units)

ISE 513 Logistics and Inventory Systems Units: 4
ISE 514 Advanced Production Planning and Scheduling Units: 4
ISE 515 Engineering Project Management Units: 4

Group A Quantitative Techniques (4 units required)

Select one course

ISE 530 Optimization Methods for Analytics Units: 4
ISE 536 Linear Programming and Extensions Units: 4
ISE 538 Markov Models for Performance Analysis Units: 4
ISE 580 Performance Analysis with Simulation Units: 4
ISE 539 Stochastic Elements of Simulation Units: 4

Group B Quality and Operations (4 units required)

Select one course

ISE 506 Lean Operations Units: 4
ISE 525 Design of Experiments Units: 4
ISE 527 Quality Management for Engineers Units: 4
ISE 583 Enterprise Wide Information Systems Units: 4

Group C Engineering Management (4 units required)

Select one course

ISE 561 Economic Analysis of Engineering Projects Units: 4
ISE 562 Decision Analysis Units: 4
ISE 564 Organizational Performance Analysis Units: 4
ISE 570 Human Factors in Engineering Units: 4

Advisor approved electives (4 units)

Total Units 28

MS OPERATIONS RESEARCH ENGINEERING DEGREE REQUIREMENTS

Required Courses: 20 units

ISE 536 Linear Programming and Extensions Units: 4
ISE 538 Markov Models for Performance Analysis Units: 4
ISE 580 Performance Analysis with Simulation Units: 4
ISE 583 Enterprise Wide Information Systems Units: 4
ISE 632 Network Flows and Combinatorial Optimization Units: 4

Select one from the following: 4 units

ISE 513 Logistics and Inventory Systems Units: 4
ISE 514 Advanced Production Planning and Scheduling Units: 4
ISE 520 Optimization Theory and Algorithms: Numerical Optimization Units: 4
ISE 525 Design of Experiments Units: 4
ISE 539 Stochastic Elements of Simulation Units: 4
ISE 562 Decision Analysis Units: 4
ISE 563 Financial Engineering Units: 4
ISE 576 Industrial Ecology Units: 4

Advisor-Approved Elective: 4 units

Total units: 28

MS PRODUCT DEVELOPMENT ENGINEERING DEGREE REQUIREMENTS

Core courses for both Management and Technology Specializations (8 units)

ISE 445 Principles and Practices of Global Innovation Units: 4
ISE 501 Innovative Conceptual Design for New Product Development Units: 4

Management Specialization Required Courses (8 units)

ISE 515 Engineering Project Management Units: 4
ISE 544 Leading and Managing Engineering Teams Units: 4 **OR**
ISE 585 Strategic Management of Technology and Innovation Units: 4 **OR**
ISE 588 Management of Rapid Product Development Units: 4

Management Specialization Technical Electives (8 units)

Select two courses from the list

AME 504 Mechatronics Systems Engineering Units: 4
AME 510 Advanced Computational Design and Manufacturing Units: 4
ISE 514 Advanced Production Planning and Scheduling Units: 4
ISE 525 Design of Experiments Units: 4
ISE 527 Quality Management for Engineers Units: 4
ISE 544 Leading and Managing Engineering Teams Units: 4 *
ISE 561 Economic Analysis of Engineering Projects Units: 4
ISE 562 Decision Analysis Units: 4
ISE 580 Performance Analysis with Simulation Units: 4
ISE 583 Enterprise Wide Information Systems Units: 4
ISE 585 Strategic Management of Technology and Innovation Units: 4
ISE 588 Management of Rapid Product Development Units: 4*
ISE 610 Advanced Design of Experiments and Quality Engineering Units: 4

Note: *Choose one that is not included as a specialization required course.

Management Specialization General Electives Suggested (4 units)

Advisor approved electives must be upper-division 400- or 500-level courses. Up to 4 units can be transferred from other institutions.

CSCI 567 Machine Learning Units: 4
DSCI 552 Machine Learning for Data Science Units: 4
ISE 460 Engineering Decisions, Economics and Ethics Units: 4
ISE 470 Human/Computer Interface Design Units: 4
ISE 506 Lean Operations Units: 4
ISE 520 Optimization Theory and Algorithms: Numerical Optimization Units: 4
ISE 529 Predictive Analytics Units: 4
ISE 530 Optimization Methods for Analytics Units: 4
ISE 633 Large Scale Optimization and Machine Learning Units: 4

PPD 587 Risk Analysis Units: 4

Technology Specialization Required Courses (7-8 units)

AME 503 Advanced Mechanical Design Units: 3
AME 525 Engineering Analysis Units: 4 **OR**
AME 526 Introduction to Mathematical Methods in Engineering II Units: 4 **OR**
AME 540 Probability and Statistics in Engineering Science Units: 4

Technology Specialization Technical Electives (6-8 units)

AME 408 Computer-Aided Design of Mechanical Systems Units: 3
AME 410 Engineering Design Theory and Methodology Units: 3
AME 502 Modern Topics in Aerospace Design Units: 3
AME 505 Engineering Information Modeling Units: 3
AME 510 Advanced Computational Design and Manufacturing Units: 4
AME 525 Engineering Analysis Units: 4 *
AME 526 Introduction to Mathematical Methods in Engineering II Units: 4 *
AME 527 Elements of Vehicle and Energy Systems Design Units: 3
AME 544 Computer Control of Mechanical Systems Units: 3
AME 546 Design for Manufacturing Assembly Units: 4
AME 547 Foundations for Manufacturing Automation Units: 4
ASTE 523 Design of Low Cost Space Missions Units: 3
CE 576 Invention and Technology Development Units: 3
ISE 567 Collaborative Engineering Principles and Practice Units: 3
ISE 576 Industrial Ecology Units: 4
ISE 585 Strategic Management of Technology and Innovation Units: 4
MASC 551 Mechanical Behavior of Engineering Materials Units: 4
MASC 583 Materials Selection Units: 4
SAE 549 Systems Architecting Units: 3

Note: *Choose one that is not included as a specialization required course.

Technology Specialization General Electives Suggested (4-7 units)

Advisor approved electives must be upper-division 400- or 500-level courses. Up to 4 units can be transferred from other institutions.

AME 481 Aircraft Design Units: 4
AME 577 Survey of Energy and Power for a Sustainable Future Units: 4
AME 578 Modern Alternative Energy Conversion Devices Units: 3
ASTE 520 Spacecraft System Design Units: 3
CE 529 Finite Element Analysis Units: 4
CE 543 Structural Instability and Failure Units: 4
CE 550 Computer-Aided Engineering Units: 3
CE 551 Computer-Aided Engineering Project Units: 3

Total Units: 28

NON-ISE ADVISOR APPROVED ELECTIVES AND PROGRAMS FOR WHICH THEY ARE APPROVED

	NLTX	EMT	HSME	ISE	ORE	PDE
AME						
AME 403 Stress Analysis						PDE
AME 407 Computer Graphics for Mechanical Engineers						PDE
AME 408 Computer-Aided Design of Mechanical Systems						PDE
AME 451 Linear Control Systems I						PDE
AME 481 Aircraft Design						PDE
AME 501 Spacecraft System Design						PDE
AME 503 Advanced Mechanical Design						PDE
AME 504 Mechatronics Systems Engineering						PDE
AME 510 Advanced Computational Design and Manufacturing						PDE
AME 514 Applications of Combustion and Reacting Flows						PDE
AME 516ab Flight Vehicle Stability and Control						PDE
AME 528a Finite Element Analysis						PDE
AME 528b Finite Element Analysis						PDE
AME 529 Aircraft Structures Analysis						PDE
AME 541 Linear Control Systems II						PDE
AME 542 Nonlinear Control Systems						PDE
AME 543 Stability of Structures						PDE
AME 544 Computer Control of Mechanical Systems						PDE
AME 546 Basic Aeroelasticity						PDE
AME 548 Analytical Methods in Robotics						PDE
AME 554 Additive Manufacturing Technologies						PDE
AME 556 Robot Dynamics and Control					ORE	
AME 563 Computational Design of Machine Components						PDE
AME 577 Survey of Energy and Power for a Sustainable Future						PDE
AME 578 Modern Alternative Energy Conversion Device						PDE
ASTE						
ASTE 520 Spacecraft System Design						PDE
BME						
BME 527 Integration of Medical Imaging Systems			HSME			
BME 528 Medical Diagnostics, Therapeutics and Informatics Applications			HSME			
BAEP						
BAEP 450 Fundamentals of Entrepreneurship		EMT				
BAEP 476 Green Entrepreneurship		EMT				
BAEP-553 Cases in New Venture Management		EMT		ISE		
BAEP 551 Introduction to New Ventures		EMT				PDE
BAEP 554 Venture Initiation		EMT				
BAEP-555 Founders Dilemmas: Anticipate and Avoid Startup Pitfalls		EMT				
BAEP 556 Technology Feasibility		EMT				PDE
BAEP 557 Technology Commercialization		EMT		ISE		PDE
BAEP 558 The Entrepreneurial Advisor: Problem Solving for Early-Stage Companies		EMT				
BAEP 559 Investing in New Ventures		EMT				
BAEP 562 Entrepreneurship in eCommerce		EMT				
BAEP 563 Corporate Entrepreneurship		EMT				
BAEP 565 Digital Playbook for Entrepreneurs: Creating a Tech Startup		EMT				
BAEP 572 Performance Mindset for Business		EMT				
BAEP 577 The Entrepreneurial CEO: The Real World of Leading Startups		EMT				
CE						
CE 404 Business and Intellectual Property Law for Engineers				ISE		
CE 412 Construction Contracts and Law				ISE		
CE 460 Construction Engineering				ISE		
CE 461Construction Estimating				ISE		
CE 462 Construction Methods and Equipment				ISE		
CE 469 Sustainable Design and Construction		EMT				
CE 471 Principles of Transportation Engineering				ISE		
CE 501 Construction Practices				ISE		
CE 502 Construction Accounting, Finance and Strategy		EMT		ISE		
CE 506 Heavy Construction Estimating				ISE		

CE 550 Computer-Aided Engineering				ISE		PDE
CE 551 Computer-Aided Engineering Project				ISE		PDE
CE 552 Managing and Financing Public Engineering Works				ISE		
CE 554 Risk and Reliability Analysis for Civil Infrastructure Systems				ISE		
CE 558 International Construction and Engineering				ISE		
CE 576 Invention and Technology Development		EMT				
CE 579 Introduction to Transportation Planning Law				ISE		
CE 585 Traffic Engineering and Control				ISE		
CE 589 Port Engineering: Planning and Operational Analysis		EMT		ISE		
CE 633 Urban Transportation Planning and Management				ISE		
CE 634 Institutional and Policy Issues in Transportation				ISE		
CSCI						
Students interested in taking courses in Computer Science (CSCI) must make an appointment with their assigned ISE academic advisor via Advise USC to inquire about approval.						
DSCI						
DSCI 510 Principles of Programming for Data Science	NLTX	EMT		ISE	ORE	PDE
DSCI 519 Foundations & Policy for Information Security	NLTX					
DSCI 549 Introduction to Computational Thinking and Data Science				ISE		
DSCI 551 Foundations of Data Management	NLTX					
DSCI 552 Machine Learning for Data Science	NLTX	EMT				
DSCI 553 Foundations & Applications of Data Mining	NLTX					
DSCI 554 Data Visualization	NLTX					
DSO						
DSO 427 Spreadsheet Modeling for Business Insights				ISE		
DSO 431 Digital Innovation as Competitive Advantage				ISE		
DSO 433 Designing Digital Processes and User Experiences				ISE		
DSO 454 Deep Learning for AI and Business Applications	NLTX					
DSO 482 Supply Chain Management				ISE		
DSO 505 Sustainable Supply Chains		EMT				
DSO 506 Sourcing and Supplier Management		EMT	HSME	ISE		
DSO 510 Business Analytics Units	NLTX	EMT	HSME			
DSO 516 Probability and Data Modeling		EMT		ISE		
DSO 520 Logistics Management		EMT				
DSO 522 Applied Time Series Analysis for Forecasting	NLTX	EMT				
DSO 528 Blended Data Business Analytics for Efficient Decisions	NLTX	EMT		ISE		
DSO 529 Advanced Regression Analysis		EMT				
DSO 530 Applied Modern Statistical Learning Methods		EMT				
DSO 531 Digital Foundations for Business Innovation	NLTX	EMT		ISE		PDE
DSO 534 Discrete-Event Simulation for Process Management		EMT				
DSO 536 Monte Carlo Simulation and Decision Models		EMT				
DSO 545 Statistical Computing and Data Visualization	NLTX	EMT				
DSO 547 Spreadsheet Modeling for Business Insights	NLTX	EMT		ISE		
DSO 548 Emerging Technologies in Supply Chain Management		EMT		ISE		
DSO 549 Application of Lean Six Sigma		EMT				
DSO 551 Digital Transformation in the Global Enterprise		EMT				PDE
DSO 552 SQL Databases for Business Analysts		EMT				
DSO 554 Digital Strategies for Sustainability in Global Markets		EMT				
DSO 556 Business Models for Digital Platforms		EMT		ISE		
DSO 559 Introduction to Python for Business Analytics	NLTX	EMT				
DSO 562 Fraud Analytics	NLTX	EMT				
DSO 565 Supply Chain Analytics		EMT		ISE		
DSO 569 Deep Learning for Business Applications		EMT				
DSO 570 The Analytics Edge: Data, Models, and Effective Decisions		EMT		ISE		
DSO 572 Strategies for Digital Analytics		EMT				
DSO 573 Data Analytics Driven Dynamic Strategy and Execution		EMT				
DSO 574 Using Big Data: Challenges and Opportunities		EMT				
DSO 575 Driving Business Transformation with GenAI and ML		EMT				
DSO 578 Fundamentals of Sports Performance Analytics		EMT				
DSO 581 Supply Chain Management		EMT	HSME	ISE		PDE

DSO 582 Service Management: Economics and Operations		EMT				
DSO 583 Operations Consulting		EMT		ISE		
DSO 584 Global Operations Management		EMT				
EE						
EE 454L Introduction to Systems Design Using Microprocessors						PDE
EE 472 Intro to Lasers and Laser Systems						PDE
EE 479 Intro to Integrated Circuit Design						PDE
EE 482 Linear Control Systems						PDE
EE 504L Solid State Processing & IC Laboratory						PDE
EE 536 Integrated Circuit Analysis & Design						PDE
EE 537 Survey of Modern Solid State Devices						PDE
EE 543abL Digital Control						PDE
EE 544 Optimal Control						PDE
EE 545 Introduction to Robotics						PDE
EE 546L Basic Robotics Laboratory						PDE
EE 547 Software Methods in Robotics						PDE
EE 554 Real Time Computer Systems						PDE
EE 559 Mathematical Pattern Recognition						PDE
EE 560L Advanced Microcomputer-Based Design						PDE
EE 562a Random Processing in Engineering						PDE
EE 569 Intro to Digital Image Processing						PDE
EE 584 Chaotic Systems						PDE
EE 585 Linear Systems Theory						PDE
EE 587 Nonlinear Control Systems						PDE
EE 588 Linear Quadratic Control						PDE
EE 593 Multivariable Control						PDE
EE 657 Parallel Processing						PDE
EE 666 Data Communication						PDE
EE 680 Computer Aided Design of Digital Systems						PDE
EE 684 Optimum Stochastic Control						PDE
EE 685 Parameter Identification & Adaptive Control						PDE
ENE						
ENE 502 Environmental and Regulatory Compliance		EMT				
ENE 505 Energy and the Environment				ISE		
ENE 506 Ecology for Environmental Engineers				ISE		
ENE 510 Water Quality Management and Practice				ISE		
FBE						
FBE 527 Entrepreneurial Finance: Financial Management for Developing Firms		EMT		ISE		PDE
FBE 529: Financial Analysis and Valuation				ISE		
FBE 543 Forecasting and Risk Analysis	NLTX					
FBE 559: Management of Financial Risk				ISE		
GSBA						
GSBA 504a Operations Management		EMT				
GSBA 504b Operations Management		EMT				
GSBA 506a Applied Managerial Statistics		EMT				
GSBA 506b Applied Managerial Statistics		EMT				
GSBA 520 Business Fundamentals for Non-Business Professionals				ISE		
GSBA 545 Data Driven Decision Making		EMT				PDE
GSBA 524 Data Science for Business		EMT				
GSBA 534 Operations Management		EMT		ISE		
GSBA 548 Corporate Finance	NLTX	EMT				PDE
GSBA 561 Evaluating Market Performance	NLTX					
GSBA 562 Management of Operations	NLTX					
GSBA 563 Technology and Information Systems Management	NLTX					
MATH						
MATH 502a Numerical Analysis	NLTX					
MATH 547 Mathematical Foundations of Statistical Learning Theory	NLTX					
MASC						
MASC 472 Polymer Science and Engineering						PDE
MASC 475 Physical Properties of Polymers						PDE

MASC 511 Materials Preparation						PDE
MASC 513 Multilayered Materials & Properties						PDE
MASC 518 Semiconductor Materials for Devices						PDE
MASC 560 Fatigue and Fracture						PDE
MASC 583 Materials Selection						PDE
MASC 584 Fracture Mechanics and Mechanisms						PDE
MKT						
MKT 512 Customer Insights and Analysis		EMT		ISE		
MKT 530 New Product Development	NLTX	EMT				
MKT 543 Market Demand and Sales Forecasting	NLTX					
MKT 551 From Strategy to Execution: User Experience (UX) and Design Units		EMT				
MKT 566 Decision Making Using Marketing Analytics	NLTX					
MOR						
MOR 458 AI Technology strategic management		EMT				
MOR 462: Management Consulting		EMT		ISE		PDE
MOR 530 Strategic Leadership in Product Management		EMT				
MOR 531 Applied Product Management		EMT				
MOR 542 Strategic Issues for Global Business		EMT				
MOR 544 Fundamentals of Crisis Management		EMT				
MOR 548 Competitive Advantage Through People				ISE		
MOR 555 Designing High Performance Organizations		EMT		ISE		
MOR 557 Strategy and Organization Consulting		EMT		ISE		
MOR 559 Strategic Renewal and Transformation		EMT				
MOR 560 Managerial Judgement and Decision Making		EMT				PDE
MOR-561 Strategies in High-Tech Businesses		EMT				
MOR 562 Strategic Choice and Valuation Analysis		EMT		ISE		
MOR-564 Strategic Innovation: Creating New Markets, Business Models and Growth		EMT		ISE		
MOR 565 Alliances and Coopertive Strategy		EMT				PDE
MOR 566 Environmental Sustainability and Competitive Advantage		EMT		ISE		
MOR 569 Negotiation and Deal-Making	NLTX	EMT				
MOR 572 Leadership and Self-Management				ISE		
MOR 588 Corporate Strategy and Competitive Dynamics		EMT				
PM						
PM 500 Foundations of Health Behavior			HSME			
PM 502 Foundations of Public Health			HSME			
PM 519 Health Disparities in the U.S.			HSME			
PM 526 Communications in Public Health			HSME			
PM 547 Public Health Policy and Politics			HSME			
PPD						
PPD 501ab Economics for Policy, Planning and Development				ISE		
PPD 506 Introduction to Microeconomics Applications in Health			HSME			
PPD 509 Problems and Issues in the Health Field			HSME	ISE		
PPD 510ab Financial Management of Health Services				ISE		
PPD 511 Health Information Systems				ISE		
PPD 513 Legal Issues in Health Care Delivery				ISE		
PPD 514 Economic Concepts Applied to Health				ISE		
PPD 516 Financial Accounting for Health Care Organizations			HSME	ISE		
PPD 518 Quality of Care Concepts			HSME			
PPD 558 Multivariate Statistical Analysis				ISE		
PPD 587 Risk Analysis (crosslisted as ISE 587)		EMT		ISE		PDE
PPD 634 Institutional and Policy Issues in Transportation				ISE		
PPDE						
PPDE 612 Consulting in Healthcare Organizations			HSME			
SAE						
SAE 541 Systems Engineering Theory and Practice	NLTX	EMT	HSME	ISE	ORE	PDE
SAE 546 Engineering Resilient Systems and System-of Systems						PDE
SAE 547 Model Based Systems Architecting and Engineering						PDE
SAE 548 System/System-of-Systems Integration and Communication	NLTX	EMT				
SAE 549 Systems Architecting		EMT		ISE		PDE
SAE 550 Systems Architecting and the Political Process		EMT				PDE

SAE 574 Net-Centric Systems Architecting and Engineering				ISE		
TAC						
TAC 404 Advanced Front-End Web Development				ISE		
TAC 422 Configuring Enterprise Resource Planning Systems				ISE		
TAC 454x Enterprise Resource Planning, Design, and Implementation				ISE		
TAC 449 Applications of Machine Learning	NLTX					
TAC 457 Network Security				ISE		
TAC 460 Web Application Project				ISE		
TAC 466 Building the High-Tech Startup		EMT				
TAC 482 Engineering Database Applications				ISE		
TAC 486 Securing and Auditing Enterprise Resource Planning Systems				ISE		
TAC 487 Enterprise Data Analytics				ISE		