

B.S/M.S. DUAL DEGREE IN INDUSTRIAL ENGINEERING

Overview

The Department of Industrial and Systems Engineering offers a dual-degree program that culminates with students receiving both Bachelor of Science and Master of Science (BS/MS) in Industrial Engineering concurrently. This program is available only to qualified students enrolled in the undergraduate program in Industrial and Systems Engineering at the University of Miami. This program is intended to give qualified Industrial Engineering students the opportunity to acquire both a baccalaureate degree (BSIE) and a Master of Science (MSIE) degree in five years rather than the 4 plus 2 years (approximately) that is traditionally expected. The two degrees are awarded simultaneously when the combined requirements have been met for both degrees.

Admission Requirements

- Juniors from any of the four ISE concentrations who have maintained at least a 3.0 CGPA have the option to apply for admission to the combined BS-MS in Industrial Engineering program.
- Those who are accepted into this accelerated program must maintain at least a 3.0 CGPA and a minimum of a 3.0 GPA for the final 30 credit hours to meet the requirements of the Graduate School.

Curriculum Requirements

Code	Title	Credit Hours
BSIE REQUIREMENTS (123 CREDIT HOURS)		
BSIE Core Courses		
EGN 114	Global Challenges Addressed by Engineering and Technology (NEW COURSE: Global Challenges in Engineering)	3
EGN 123	Computing and Digital Solutions for the future (NEW COURSE: Digital Solutions for the Future)	3
ISE 224	Python for Engineers	3
ISE 201	Work Design Systems	3
ISE 312	Foundations of Data Analysis	3
ISE 363	Project Management for Engineers	3
ISE 380	Engineering Economic Analysis	3
ISE 406	Computer-Aided Manufacturing	3
ISE 441	Operations Research and Optimization Methods	3
ISE 442	Stochastic Modeling and Decision Making	3
ISE 465	Inventory and Supply Chain Management	3
ISE 494	Senior Design Project	3
ISE 493	Industrial and Systems Engineering Capstone Planning	1
ISE 512	Quality Management Systems	3
ISE 516	Introduction to Applied Data Analytics	3
ISE 524	Systems Intelligence with Software Applications	3
ISE 547	Simulation Modeling and Systems Analysis	3
ISE 557	Ergonomics and Human Factors Engineering	3
ISE 568	Facilities Planning and Logistics	3
Choose one of the following:		3
CAE 210	Mechanics of Solids I	
ECE 205	Principles of Electrical Engineering--I	
MAE 303	Thermodynamics	
ISE Undergraduate Electives		3
Students must take at least 1 courses in ISE 300 level or above		
Technical Elective		3
Math and Science Courses		
ISE 310	Introduction to Engineering Probability	3
MTH 151	Calculus I for Engineers	5
MTH 162	Calculus II	4
MTH 210	Introduction to Linear Algebra	3

or EGN 318	Engineering Mathematics I	
MTH 311	Introduction to Ordinary Differential Equations	3
or EGN 319	Engineering Mathematics II	
PHY 221	University Physics I	3
Basic Science Elective		3
Basic Science Lab Elective		1
PHY 222	University Physics II	3
PHY 106	Physics Laboratory 1	1
PHY 223	University Physics III	3
or EGN 233	Electromagnetics and Its Engineering Applications	
General Education Requirements		
Written Communication Skills:		
WRS 105	First-Year Writing I	3
WRS 107	First-Year Writing II: STEM	3
Quantitative Skills:		
MTH 151	Calculus I for Engineers (fulfilled through the major)	
Areas of Knowledge:		
Arts and Humanities Cognate		9
People and Society Cognate		9
STEM Cognate (9 credits) (fulfilled through the major)		
Additional Requirements		
ECO 211	Principles of Microeconomics	3
or ECO 212	Principles of Macroeconomics	
MSIE REQUIREMENTS (30 CREDIT HOURS)		
ISE 712	Design of Experiments	3
ISE 742	Linear Programming and Extensions	3
ISE 757	Ergonomics and Occupational Biomechanics	3
ISE 763	Project Management Techniques	3
or ISE 761	Advanced Economics of Systems	
ISE 765	Advanced Production Systems	3
or ISE 764	Supply Chain Management	
ISE 794	Master's Project	3
ISE Graduate Electives		12
Total Credit Hours		153

Plan of Study

Freshman Year		
Fall		Credit Hours
EGN 114	Global Challenges Addressed by Engineering and Technology	3
WRS 105	First-Year Writing I	3
MTH 151	Calculus I for Engineers	5
PHY 221	University Physics I	3
Credit Hours		14
Spring		
EGN 123	Computing and Digital Solutions for the future	3
WRS 107	First-Year Writing II: STEM	3
MTH 162	Calculus II	4
ECO 211 or 212	Principles of Microeconomics or Principles of Macroeconomics	3
PHY 222	University Physics II	3
PHY 106	Physics Laboratory 1	1
Credit Hours		17

Sophomore Year		
Fall		
HA Cognate (HA Elective) ¹		3
ISE 201	Work Design Systems	3
MTH 210	Introduction to Linear Algebra	3
PHY 223	University Physics III	3
PS Cognate (PS Elective) ¹		3
Credit Hours		15
Spring		
HA Cognate (HA Elective) ¹		3
ISE 224	Python for Engineers	3
CAE 210, ECE 205, or MAE 303	Mechanics of Solids I or Principles of Electrical Engineering–I or Thermodynamics	3
MTH 311	Introduction to Ordinary Differential Equations	3
Basic Science Elective		3
Basic Science Lab Elective		1
Credit Hours		16
Junior Year		
Fall		
HA Cognate (Advanced HA Elective) ¹		3
ISE 310	Introduction to Engineering Probability	3
ISE 380	Engineering Economic Analysis	3
ISE 441	Operations Research and Optimization Methods	3
PS Cognate (Advanced PS Elective) ¹		3
Technical Elective ²		3
Credit Hours		18
Spring		
ISE 312	Foundations of Data Analysis	3
ISE 363	Project Management for Engineers	3
ISE 406	Computer-Aided Manufacturing	3
ISE 442	Stochastic Modeling and Decision Making	3
PS Cognate (Advance PS elective) ¹		3
ISE Elective ³		3
Credit Hours		18
Senior Year		
Fall		
ISE 465	Inventory and Supply Chain Management	3
ISE 493	Industrial and Systems Engineering Capstone Planning	1
ISE 512	Quality Management Systems	3
ISE 547	Simulation Modeling and Systems Analysis	3
ISE 557	Ergonomics and Human Factors Engineering	3
ISE Elective ⁴		3
Credit Hours		16
Spring		
ISE 516	Introduction to Applied Data Analytics	3
ISE 524	Systems Intelligence with Software Applications	3
ISE 568	Facilities Planning and Logistics	3
ISE Elective ⁴		3
ISE Elective ⁴		3
ISE 494	Senior Design Project	3
Credit Hours		18

Fifth Year		
Fall		
ISE 712	Design of Experiments	3
ISE 763 or 761	Project Management Techniques or Advanced Economics of Systems	3
ISE 742	Linear Programming and Extensions	3
ISE Elective ⁴		3
Credit Hours		12
Spring		
ISE 757	Ergonomics and Occupational Biomechanics	3
ISE 764	Supply Chain Management	3
ISE 794	Master's Project	3
Credit Hours		9
Total Credit Hours		153

¹ To be selected from lists of approved People and Society (PS)/Humanities and Arts (HA) (or applicable cognates). Students take a minimum of 3 courses (9 credit hours) in HA cognate and 3 courses in PS Cognate (9 credit hours).

² The Technical Elective is selected from courses at the 300 level or above, offered by one of the following departments: MTH, BME (except BME 320), CAE, ECO, ECE, MAE, ACC, FIN, MGT(Except MGT 303), MAS, MKT.

³ ISE Electives - Choose 1 course ISE 300 level or above.

⁴ ISE Electives are selected from courses at the 600 or 700 level, offered by the Department of Industrial & Systems Engineering.

Note: Failure to follow the plan of study may result in a delay in your graduation.