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 IEN 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		
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 351	Safety and Ethics in Engineering	3
ISE 363	Project Management for Engineers	3
ISE 380	Engineering Economic Analysis	3
ISE 406	Computer-Aided Manufacturing	3
ISE 441	Deterministic Models in Operations Research	3
ISE 442	Stochastic Models in Operations Research	3
ISE 465	Inventory and Supply Chain Management	3
ISE 512	Quality Management Systems	3
ISE 516	Introduction to Applied Data Analytics	3
ISE 524	Decision Support Systems in Industrial Engineering	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		**6**
Students must take at least 1 course in each group to satisfy ISE electives.		
Group 1		
ISE 570	Engineering Management	
ISE 571	Engineering Entrepreneurship	
ISE 572	Management of Technological Innovation	
Group 2		
ISE 513	Quality Management in Service Organizations	
ISE 505	Robotics	

ISE 507	Design of Manufacturing Systems	
ISE 548	Games and Decision Making	
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
MTH 311	Introduction to Ordinary Differential Equations	3
CHM 151	Chemistry for Engineers	3
CHM 153	Chemistry Laboratory for Engineers	1
PHY 221	University Physics I	3
PHY 222	University Physics II	3
PHY 223	University Physics III	3
PHY 224	University Physics II Lab	1
PHY 225	University Physics III Lab	1
General Education Requirements		
Written Communication Skills:		
WRS 105	First-Year Writing I	3
WRS 107	First-Year Writing II: STEM	3
Quantitative Skills (3 credits) (fulfilled through MTH 151)		
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		
ISE 694	Master's Capstone Design Project	3
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
ISE 765	Advanced Production Systems	3
or ISE 764	Supply Chain Management	
ISE Graduate Electives		12
Total Credit Hours		**156**

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 224	University Physics II Lab	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
PHY 225	University Physics III Lab	1
PS Cognate (PS Elective) [1]		3
	Credit Hours	**16**
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
CHM 151	Chemistry for Engineers	3
CHM 153	Chemistry Laboratory for Engineers	1
MTH 311	Introduction to Ordinary Differential Equations	3
	Credit Hours	**16**
Junior Year		
Fall		
HA Cognate (Advanced HA Elective) [1]		3
ISE 310	Introduction to Engineering Probability	3
ISE 351	Safety and Ethics in Engineering	3
ISE 380	Engineering Economic Analysis	3
ISE 441	Deterministic Models in Operations Research	3
PS Cognate (Advanced PS Elective) [1]		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 Models in Operations Research	3
Technical Elective [2]		3
PS Cognate (Advance PS elective) [1]		3
	Credit Hours	**18**
Senior Year		
Fall		
ISE 465	Inventory and Supply Chain Management	3
ISE 512	Quality Management Systems	3
ISE 547	Simulation Modeling and Systems Analysis	3
ISE 557	Ergonomics and Human Factors Engineering	3
ISE Elective Group 1 or 2 [3]		3
ISE Elective [4]		3
	Credit Hours	**18**
Spring		
ISE 516	Introduction to Applied Data Analytics	3
ISE 524	Decision Support Systems in Industrial Engineering	3
ISE 568	Facilities Planning and Logistics	3

ISE Elective Group 1 or 2 [3]		3
ISE Elective [4]		3
ISE Elective [4]		3
	Credit Hours	**18**
Fifth Year		
Fall		
ISE 712	Design of Experiments	3
ISE 763	Project Management Techniques	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 694	Master's Capstone Design Project	3
	Credit Hours	**9**
	Total Credit Hours	**156**

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, EEN, ISE, MAE, ACC, FIN, MGT(Except MGT 303), MAS, MKT.

3 ISE Electives - Choose one course from Group 1 and one course from Group 2. Group 1 - ISE 570, ISE 571, ISE 572. Group 2 - ISE 513, ISE 505 ISE 507, ISE 548

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