B.S. IN INDUSTRIAL ENGINEERING/M.S. IN MECHANICAL ENGINEERING

Overview

The College of Engineering offers a dual-degree program that culminates with students receiving a Bachelor of Science in Industrial Engineering and a Master of Science in Mechanical Engineering concurrently. This program is available only to qualified students enrolled in the undergraduate program in Industrial Engineering at the University of Miami. This program is intended to give qualified Industrial Engineering students the opportunity to acquire both a baccalaureate degree (BSISE) and a Master of Science (MSME) 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.

- Juniors enrolled in ISE who have maintained at least a 3.0 CGPA have the option to apply for admission to the combined B.S. ISE-M.S. ME 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.
- Up to 6 credit hours of engineering electives earned during the fourth year can be counted toward the 30 credit hours required for the M.S. degree. If their schedule allows, students may be able to complete an additional 6 credits of graduate classes during their fourth year.
- Students must be registered for a minimum of 12 undergraduate credit hours per semester in their fourth year.
- Students can register for a maximum of 6 graduate credit hours in each semester of their fourth year.
- If a student needs to withdraw from the B.S. ISE/M.S. ME program, then all the requirements for the BS degree must be completed for graduation with the B.S. ISE degree.

Admission Requirements

The dual B.S. IE/M.S. ME program is available only to qualified undergraduate students enrolled in the Department of Industrial and Systems Engineering. Students must have undergraduate student status and a cumulative G.P.A. of at least 3.0 at the time of application.

Qualified students are strongly advised to apply to the dual degree program as early as possible in their junior year to facilitate academic advising and course selection in the second semester of their junior year. Students opting for an M.S. degree in a discipline different from their B.S. degree may need to take some prerequisite coursework. Before submitting an application, students should discuss the program and possibility of entering with an academic adviser.

Graduation Requirements

Students accepted into the dual degree program must maintain at least a 3.0 Cumulative GPA, and meet all other pertinent Graduate School requirements, including a minimum of 3.0 GPA in the credits applied toward the MS degree.

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 ISE -MS ME 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 201	Work Design Systems	3
ISE 224	Python for Engineers	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	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 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
ISE Undergraduate Electives		**3**
Students must take at least 1 course in each group. One course should be taken at the graduate level.		
Group 1		
ISE 570	Engineering Management	
ISE 571	Engineering Entrepreneurship	
ISE 572	Management of Technological Innovation	
Group 2		
ISE 505	Robotics	
ISE 507	Design of Manufacturing Systems	
ISE 513	Quality Management in Service Organizations	
ISE 548	Games and Decision Making	
Engineering and Technical Electives		**3**
Math and Basic 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
or CHM 121	Principles of Chemistry	
CHM 153	Chemistry Laboratory for Engineers	1
or CHM 113	Chemistry Laboratory I	
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:		
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)		
Other credit hours		**3**
MSME REQUIREMENTS (30 CREDIT HOURS)		
Technical electives taken as graduate courses		6
MAE 601	Methods of Engineering Analysis	3
MAE 751	Master's Project	3

MAE electives	18
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 224	University Physics II Lab	1
	Credit Hours	**17**
Sophomore Year		
Fall		
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
HA Cognate (HA Elective) [1]		3
PS Cognate (PS Elective) [1]		3
	Credit Hours	**16**
Spring		
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 or 121	Chemistry for Engineers or Principles of Chemistry	3
CHM 153 or 113	Chemistry Laboratory for Engineers or Chemistry Laboratory I	1
MTH 311	Introduction to Ordinary Differential Equations	3
HA Cognate (HA Elective) [1]		3
	Credit Hours	**16**
Junior Year		
Fall		
ISE 310	Introduction to Engineering Probability	3
ISE 351	Safety and Ethics in Engineering	3
ISE 380	Engineering Economic Analysis	3
ISE 441	Operations Research and Optimization Methods	3
HA Cognate (Advanced HA Elective) [1]		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 Modeling and Decision Making	3
ISE Elective Group 1 or 2 [2]		3
PS Cognate [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
Engineering/technical elective taken as graduate course [3]		3
Graduate Course [3]		3
	Credit Hours	**18**
Spring		
ISE 494	Senior Design Project	3
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 Group 1 or 2 taken as a graduate course [3]		3
Graduate Course [3]		3
	Credit Hours	**18**
Fifth Year		
Fall		
MAE 601	Methods of Engineering Analysis	3
MAE electives		6
	Credit Hours	**9**
Spring		
MAE 751	Master's Project	3
MAE electives		6
	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 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

3 Graduate courses are selected from courses at the 600 or 700 level. Contact the Graduate Program Coordinator in Mechanical Engineering for additional guidance.