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

Overview

The College of Engineering offers a dual-degree program that culminates with students receiving a Bachelor of Architectural Engineering and a Master of Science in Industrial Engineering concurrently. This program is available only to qualified students enrolled in the undergraduate program in Architectural Engineering at the University of Miami. This program is intended to give qualified Architectural Engineering students the opportunity to acquire both a baccalaureate degree and a Master of Science 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 architectural engineering who have maintained at least a 3.0 CGPA have the option to apply for admission to the combined B.S./M.S. 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.
- If their schedule allows, students may be able to complete 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./M.S. program, then all the requirements for the BS degree must be completed for graduation with the B.S. architectural engineering degree.

Admission Requirements

The dual B.S. AE/M.S. IE program is available only to qualified undergraduate students enrolled in the Department of Civil 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

The dual B.S. AE/M.S. IE program is available only to qualified undergraduate students enrolled in Architectural 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.

This program is intended for exceptional students to acquire both a Bachelor of Science and a Master of Science degree simultaneously, in five years rather than the 4 plus 2 years (approximately) it normally requires.

Curriculum Requirements

Code	Title	Credit Hours
B.S.A.E. REQUIREMENTS (127 CREDITS)		
EGN 110	Innovation and Entrepreneurship in Engineering	3
or EGN 114	Global Challenges Addressed by Engineering and Technology	
or EGN 123	Computing and Digital Solutions for the future	
Engineering Courses		
CAE 115	Introduction to Engineering II: Geospatial Data (Surveying and GIS)	2
CAE 210	Mechanics of Solids I	3
CAE 211	Mechanics of Solids II	3

CAE 212	Structural Laboratory	1
CAE 310	Structural Analysis	3
CAE 320	Concrete Structures	3
CAE 321	Steel Structures	3
CAE 330	Fluid Mechanics	3
CAE 361	Building Information Modeling I	3
CAE 370	Geotechnical Engineering I	3
CAE 371	Geotechnical Laboratory	1
CAE 380	Electrical and Illumination Systems for Buildings	3
CAE 381	Building Mechanical Systems I: Hvac Fundamentals	3
CAE 402	Professional Engineering Practice	3
CAE 403	Senior Design Project I - Engineering Design	3
CAE 404	Senior Design Project II - Integrated Engineering Documents	3
CAE 460	Construction Management	3
CAE 470	Foundations and Earth Retaining Systems	3
CAE 480	Plumbing and Life Safety for Buildings	3
CAE 481	Building Mechanical Systems II: HVAC Systems	3
CAE 581	Energy-Efficient Building Design	3
ISE 311	Applied Probability and Statistics	3
MAE 303	Thermodynamics	3
Math and Science Courses		
MTH 151	Calculus I for Engineers	5
MTH 162	Calculus II	4
MTH 211	Calculus III	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
Additional Required Courses		
ARC 230	Building Technology I: Materials and Methods	3
ARC 292	Introduction to Architecture Design I	3
ARC 293	Introduction to Architecture Design II	3
ARC 267	History of Architecture I: Ancient, Medieval and Renaissance	3
ARC 268	History of Architecture II: Baroque through Contemporary	3
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 & Humanities Cognate (9 credits) (fulfilled through the required ARC courses)		
People and Society Cognate		9
STEM Cognate (9 credits) (fulfilled through the major)		
M.S.I.E. REQUIREMENTS (30 CREDITS)		
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
or ISE 764	Supply Chain Management	
ISE Graduate Courses		15
Total Credit Hours		**157**

Sample Plan of Study

A typical plan of study is shown in the table below.

Freshman Year		
First Semester		**Credit Hours**
EGN 110, 114, or 123	Innovation and Entrepreneurship in Engineering or Global Challenges Addressed by Engineering and Technology or Computing and Digital Solutions for the future	3
WRS 105	First-Year Writing I	3
MTH 151	Calculus I for Engineers	5
PHY 221	University Physics I	3
	Credit Hours	**14**
Second Semester		
CAE 115	Introduction to Engineering II: Geospatial Data (Surveying and GIS)	2
CAE 210	Mechanics of Solids I	3
WRS 107	First-Year Writing II: STEM	3
MTH 162	Calculus II	4
PHY 222	University Physics II	3
PHY 224	University Physics II Lab	1
	Credit Hours	**16**
Sophomore Year		
First Semester		
CAE 211	Mechanics of Solids II	3
CAE 212	Structural Laboratory	1
ARC 230	Building Technology I: Materials and Methods	3
ARC 267	History of Architecture I: Ancient, Medieval and Renaissance	3
PHY 223	University Physics III	3
PHY 225	University Physics III Lab	1
ISE 311	Applied Probability and Statistics	3
	Credit Hours	**17**
Second Semester		
CAE 310	Structural Analysis	3
ARC 292	Introduction to Architecture Design I	3
CHM 151	Chemistry for Engineers	3
CHM 153	Chemistry Laboratory for Engineers	1
MTH 211	Calculus III	3
MTH 311	Introduction to Ordinary Differential Equations	3
	Credit Hours	**16**
Junior Year		
First Semester		
CAE 320	Concrete Structures	3
CAE 330	Fluid Mechanics	3
CAE 361	Building Information Modeling I	3
MAE 303	Thermodynamics	3
ARC 293	Introduction to Architecture Design II	3
PS Cognate [2]		3
	Credit Hours	**18**

Second Semester		
CAE 321	Steel Structures	3
CAE 370	Geotechnical Engineering I	3
CAE 371	Geotechnical Laboratory	1
CAE 380	Electrical and Illumination Systems for Buildings	3
CAE 381	Building Mechanical Systems I: Hvac Fundamentals	3
ARC 268	History of Architecture II: Baroque through Contemporary	3
	Credit Hours	**16**
Senior Year		
First Semester		
CAE 403	Senior Design Project I - Engineering Design	3
CAE 470	Foundations and Earth Retaining Systems	3
CAE 480	Plumbing and Life Safety for Buildings	3
CAE 481	Building Mechanical Systems II: HVAC Systems	3
PS Cognate		3
Graduate Course		3
	Credit Hours	**18**
Second Semester		
CAE 404	Senior Design Project II - Integrated Engineering Documents	3
CAE 402	Professional Engineering Practice	3
CAE 460	Construction Management	3
CAE 581	Energy-Efficient Building Design	3
PS Cognate		3
Graduate Course		3
	Credit Hours	**18**
Graduate Year		
First Semester		
ISE 712	Design of Experiments	3
ISE 763	Project Management Techniques	3
ISE 742	Linear Programming and Extensions	3
ISE Elective		3
	Credit Hours	**12**
Second Semester		
ISE 757	Ergonomics and Occupational Biomechanics	3
ISE 764	Supply Chain Management	3
ISE 694	Master's Capstone Design Project	3
ISE Elective		3
	Credit Hours	**12**
	Total Credit Hours	**157**