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

Overview

The Department of Civil and Architectural Engineering (CAE) offers a 5-year BS/MS program that allows students to earn both a Bachelor's and Master's degree in architectural engineering.

The educational objectives, specialty areas, and learning outcomes of each Master of Science program are shown in their respective sections (MSAE (http://bulletin.miami.edu/graduate-academic-programs/engineering/civil-architectural-environmental-engineering/architectural-engineering-ms/)) and (MSCE (http://bulletin.miami.edu/graduate-academic-programs/engineering/civil-architectural-environmental-engineering/civil-engineering-ms/)).

This 5-Year program is open to students who are admitted to the graduate program at the end of their junior year. Students applying for this program should have a minimum grade point average (GPA) of 3.0.

Admission Requirements

Undergraduate students of the CAE department having a GPA of 3.5 or better are encouraged to apply to the 5-year BS/MS program during their junior year. Applicants are required to submit official transcripts, and three letters of reference. Admission criteria are described under Colleges of Engineering – Graduate Admission Requirements.

Curriculum Requirements

The undergraduate and graduate course requirements are provided in the table below. The graduate portion is non-thesis. Additional graduate degree requirements include:

- Completion of the BS degree
- Minimum of 30 graduate-level credits with a GPA of at least 3.0, and no grade lower than C
- A Graduate Program of Study, which is the student's specific set of coursework that defines the course requirements for graduation, must be approved by an advisory committee (known as the Supervisory Committee). The Program of Study is tailored to the student's background and goals by their advisor, and must be approved as constituting an MS in Architectural Engineering by the student's Program of Study Committee.

Code	Title	Credit Hours
B.S.A.E. REQUIREMENTS (125 Credits)		
Engineering Courses		
EGN 110	Innovation and Entrepreneurship in Engineering	3
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 401	Civil and Architectural Engineering Seminars (CAE Seminars (NEW COURSE))	1
CAE 402	Professional Engineering Practice	3
CAE 403	Senior Design Project I - Engineering Design	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 106	Physics Laboratory 1	1
PHY 108	Physics Laboratory 2	1
Additional Required Courses		
ARC 230	Building Technology I: Materials and Methods	3
ARC 267	History of Architecture I: Ancient, Medieval and Renaissance	3
ARC 268	History of Architecture II: Baroque through Contemporary	3
ARC 292	Introduction to Architecture Design I	3
ARC 293	Introduction to Architecture Design II	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.A.E REQUIREMENTS (30 Credits)		
6 credits from Group A		6
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
3 credits from Group G		3
Group G: CAE Master's Design Project		
CAE 604	Master's Design Project	
9 credits from any of the following Groups: A and/or B		9
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
9 credits from any of the following Groups: A, B, C, and/or D		9
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Group C: 600- or 700-level CAE courses in Construction Management (CM)		
Group D: Any pre-approved course in any UM Department at the 600- or 700-level (i.e. XXX 600-799) except CAE and UMI		
3 credits from any of the following Groups: A, B, D, and/or E		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Group D: Any pre-approved course in any UM Department at the 600- or 700-level (i.e. XXX 600-799) except CAE or UMI		
Group E: CAE Independent Study (Special Problems)		
Total Credit Hours		**155**

1 All courses are 3 credit hours, unless otherwise indicated

2 Master's Thesis (CAE 810 (http://bulletin.miami.edu/search/?search=cae+810)) will not count towards the degree requirements

3 Courses may not count towards multiple requirements

* In their senior year, students enroll in CAE 604 instead of CAE 404.
Refer to the Additional Details section (below) for additional options and restrictions.

Transfer of credits from other institutions

- A total of 6 credits of transfer and/or exchange coursework not counted towards the student's B.S. may be taken at another institution and used to satisfy requirements for the M.S. The number of eligible credits for transfer is 9, when pre-approved coursework is taken as part of a semester abroad experience.

Additional Details

- The classification of courses into their respective Groups can be found in the CAE Courses (http://bulletin.miami.edu/undergraduate-academic-programs/engineering/civil-architectural-environmental-engineering/#coursestext) section.
- Internships, Practical Training, workshops, or other types of practicum are neither required nor optional credit-earning components in the established graduate curriculum (Program of Study). Credit earned through these experiences (such as UMI 605 (http://bulletin.miami.edu/search/?P=UMI%20605)) will not count towards any CAE degree requirements.
- The Supervisory Committee must have a minimum of 3 members, including:
  - Committee Chair (Advisor) shall be full-time CAE faculty and a member of the Graduate Faculty
  - Full-time or part-time CAE faculty
  - Non-CAE member with an earned Ph.D.
- In addition to the Committee Chair, at least one Committee member must be tenured/tenure-earning or a member of the Graduate Faculty.

Sample Plan of Study

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

Freshman Year		
First Semester		**Credit Hours**
EGN 110 or 114	Innovation and Entrepreneurship in Engineering or 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**
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 106	Physics Laboratory 1	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
ISE 311	Applied Probability and Statistics	3
PHY 223	University Physics III	3
PHY 108	Physics Laboratory 2	1
	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 401	Civil and Architectural Engineering Seminars	1
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 Level Course from Group A or B		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
	Credit Hours	**19**
Second Semester		
CAE 402	Professional Engineering Practice	3
CAE 460	Construction Management	3
CAE 581	Energy-Efficient Building Design	3
CAE 604	Master's Design Project *	3
PS Cognate		3
	Credit Hours	**15**
Graduate Year		
First Semester		
Graduate Level Course from Group A		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Graduate Level Course from Group A or B		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil, architectural, and environmental engineering		
Graduate Level Course from Group A, B, C, or D		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Group C: 600- or 700-level CAE courses in Construction Management (CM)		
Group D: Any pre-approved course in any UM Department at the 600- or 700-level (i.e. XXX 600-799)		
Graduate Level Course from Group A, B, D, or E		3

Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Group D: Any pre-approved course in any UM Department at the 600- or 700-level (i.e. XXX 600-799)		
Group E: CAE Independent Study (Special Problems)		
	Credit Hours	**12**
Second Semester		
Graduate Level Course from Group A		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Graduate Level Course from Group A or B		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Graduate Level Course from Group A, B, C, or D		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Group C: 600- or 700-level CAE courses in Construction Management (CM)		
Group D: Any pre-approved course in any UM Department at the 600- or 700-level (i.e. XXX 600-799) except CAE and UMI		
Graduate Level Course from Group A, B, C, or D		3
Group A: 700-level lecture-based CAE courses in civil and architectural engineering		
Group B: 600-level lecture-based CAE courses in civil and architectural engineering		
Group C: 600- or 700-level CAE courses in Construction Management (CM)		
Group D: Any pre-approved course in any UM Department at the 600- or 700-level (i.e. XXX 600-799) except CAE and UMI		
	Credit Hours	**12**
	Total Credit Hours	**155**

* In their senior year, students enroll in CAE 604 instead of CAE 404.