

B.S. IN ARCHITECTURAL ENGINEERING/MASTER OF ARCHITECTURE

Overview

A six-year dual-degree program leading to a Bachelor of Science in Architectural Engineering and a Master of Science in Architecture is available. The program is open to exceptional students who are admitted to the graduate program at the end of their junior year. Upon completion of this program, graduates are eligible for professional registration as both an engineer and an architect. The course requirements for the BSAE/MArch program are shown in the Plan of Study.

Curriculum Requirements

| Code | Title | Credit Hours |
|-----------------------------|--|--------------|
| Engineering Courses | | |
| CAE 111 | Introduction to Engineering I | 3 |
| CAE 115 | Introduction to Engineering II (Surveying) | 1 |
| 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 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 |
| CAE 361 | Building Information Modeling I | 3 |
| Architecture Courses | | |
| ARC 121 | Architecture and Culture | 1 |
| 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 500 | Architecture Theory | 3 |
| ARC 501 | Architecture Design and Theory I | 6 |
| ARC 502 | Architecture Design and Theory II | 6 |
| ARC 503 | Architectural Design and Theory III | 6 |
| ARC 504 | Architecture Design and Theory I | 6 |
| ARC 511 | Visual Representation I | 3 |
| ARC 608 | Architecture Design | 6 |
| ARC 609 | Architecture Design | 6 |
| ARC 610 | Architecture Design Degree Project | 6 |
| ARC 613 | Spatial Representation + Architectural Media 2 | 3 |

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| ARC 620 | Responsible Architecture | 3 |
| ARC 652 | Management of Professional Practice | 3 |
| ARC 699 | Directed Research (Architecture Thesis Prep) | 6 |
| Architecture Elective | | 9 |
| Architecture History Elective | | 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 | | |
| WRS 105 | First-Year Writing I | 3 |
| WRS 107 | First-Year Writing II: STEM | 3 |
| GEG 199 | Geographic Information Systems for Engineers | 1 |
| Arts and Humanities Cognate | ³ Courses Embedded in Curriculum | 3 |
| People and Society Cognate | ³ Courses | 3 |
| Total Credit Hours | | 194 |

Plan of Study

| Year One | | Credit Hours |
|------------------------|---|--------------|
| First Semester | | |
| CAE 111 | Introduction to Engineering I | 3 |
| WRS 105 | First-Year Writing I | 3 |
| MTH 151 | Calculus I for Engineers | 5 |
| PHY 221 | University Physics I | 3 |
| ARC 121 | Architecture and Culture | 1 |
| Credit Hours | | 15 |
| Second Semester | | |
| CAE 115 | Introduction to Engineering II (Surveying) | 1 |
| CAE 210 | Mechanics of Solids I | 3 |
| WRS 107 | First-Year Writing II: STEM | 3 |
| GEG 199 | Geographic Information Systems for Engineers | 1 |
| MTH 162 | Calculus II | 4 |
| PHY 222 | University Physics II | 3 |
| PHY 224 | University Physics II Lab | 1 |
| Credit Hours | | 16 |
| Year Two | | |
| First Semester | | |
| CAE 211 | Mechanics of Solids II | 3 |
| CAE 212 | Structural Laboratory | 1 |
| ARC 230 | Building Technology I: Materials and Methods (ARC 630) ¹ | 3 |
| ARC 267 | History of Architecture I: Ancient, Medieval and Renaissance (ARC 667) ¹ | 3 |
| PHY 223 | University Physics III | 3 |
| PHY 225 | University Physics III Lab | 1 |

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| ISE 311 | Applied Probability and Statistics | 3 |
| Credit Hours | | 17 |
| Second Semester | | |
| CAE 310 | Structural Analysis (ARC 631) ¹ | 3 |
| CHM 151 | Chemistry for Engineers | 3 |
| CHM 153 | Chemistry Laboratory for Engineers | 1 |
| MAE 303 | Thermodynamics | 3 |
| MTH 211 | Calculus III | 3 |
| MTH 311 | Introduction to Ordinary Differential Equations | 3 |
| Credit Hours | | 16 |
| Year Three | | |
| Summer | | |
| Required 10 Week Semester | | |
| ARC 203 | Architecture Design III (ARC 606) ² \$ | 6 |
| Credit Hours | | 6 |
| First Semester | | |
| CAE 320 | Concrete Structures (ARC 633) ¹ \$ | 3 |
| CAE 330 | Fluid Mechanics | 3 |
| PS Cognate ¹ | | 3 |
| ARC 501 | Architecture Design and Theory I (ARC 292/ARC604) ¹ \$ | 6 |
| ARC 511 | Visual Representation I (ARC 611) ² \$ | 3 |
| PS Cognate * | | 3 |
| Credit Hours | | 21 |
| Second Semester | | |
| CAE 321 | Steel Structures (ARC 632) ¹ \$ | 3 |
| CAE 380 | Electrical and Illumination Systems for Buildings (ARC 663) ¹ \$ | 3 |
| CAE 381 | Building Mechanical Systems I: Hvac Fundamentals (ARC 662) ¹ \$ | 3 |
| ARC 502 | Architecture Design and Theory II (ARC 293/ARC 605) ¹ \$ | 6 |
| ARC 513 | Advanced Visual Representation (ARC 613) ² \$ | 3 |
| Credit Hours | | 18 |
| Summer (Required 10-week semester) | | |
| ARC 503 | Architectural Design and Theory III | 6 |
| Credit Hours | | 6 |
| Year Four | | |
| First Semester | | |
| CAE 480 | Plumbing and Life Safety for Buildings \$ | 3 |
| ARC 500 | Architecture Theory (ARC 620) ² \$ | 3 |
| ARC 504 | Architecture Design and Theory I (ARC 607) ² \$ | 6 |
| CAE 361 Building Information Modeling I | | 3 |
| Credit Hours | | 15 |
| Second Semester | | |
| CAE 370 | Geotechnical Engineering I \$ | 3 |
| CAE 371 | Geotechnical Laboratory \$ | 1 |
| CAE 402 | Professional Engineering Practice | 3 |
| CAE 460 | Construction Management (Arch Elective) ¹ \$ | 3 |
| ARC 268 | History of Architecture II: Baroque through Contemporary (ARC 668) ² \$ | 3 |
| Architecture Elective ² | | 3 |
| Credit Hours | | 16 |
| Year Five | | |
| First Semester | | |
| CAE 403 | Senior Design Project I - Engineering Design \$ | 3 |
| CAE 470 | Foundations and Earth Retaining Systems \$ | 3 |

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| CAE 481 | Building Mechanical Systems II: HVAC Systems (ARC Elective) ¹ § | 3 |
| ARC 608 | Architecture Design ² § | 6 |
| Credit Hours | | 15 |
| Second Semester | | |
| CAE 404 | Senior Design Project II - Integrated Engineering Documents § | 3 |
| ARC 609 | Architecture Design ² | 6 |
| Architecture Elective ² | | 3 |
| PS Cognate * | | 3 |
| Credit Hours | | 15 |
| Year Six | | |
| First Semester | | |
| ARC 699 | Directed Research ² § | 3 |
| ARC 652 | Management of Professional Practice ² § | 3 |
| History of Architecture Elective ² | | 3 |
| Architecture Elective ² | | 3 |
| PS Cognate * | | 3 |
| Credit Hours | | 15 |
| Second Semester | | |
| CAE 581 | Energy-Efficient Building Design (ARC Elective) ¹ § | 3 |
| ARC 610 | Architecture Design Degree Project ² § | 6 |
| Architecture Elective ² | | 3 |
| Credit Hours | | 12 |
| Total Credit Hours | | 203 |

Note: ARC 292 (<http://bulletin.miami.edu/search/?search=arc+292>) or ARC 293 (<http://bulletin.miami.edu/search/?search=arc+293>), ARC 267 (<http://bulletin.miami.edu/search/?search=arc+267>), and ARC 268 (<http://bulletin.miami.edu/search/?search=arc+268>) are required to satisfy the Humanities and Arts (HA) cognate in Architecture: Design and Theory.

Footnotes

- ¹ Shared BSAE/M.Arch Curriculum
² M.Arch Curriculum
* To be selected from a People and Society (PS) Cognate
§ Only offered one per year.