

# MASTER OF ENGINEERING IN ARCHITECTURAL ENGINEERING

The Master of Engineering in Architectural Engineering is a coursework-only graduate degree program oriented toward students who wish to develop more knowledge about the design, construction, and operation of buildings and their systems, including heating, ventilation, and air-conditioning (HVAC) systems, facades and enclosures, and electrical, lighting, fire protection, and plumbing systems. The degree program is intended for preparation for advanced engineering practice rooted in the principles of building science, indoor environmental quality, energy efficiency, and sustainability.

Students with a variety of academic backgrounds are eligible to apply for the program, including those with undergraduate degrees in engineering disciplines (e.g., architectural, civil, mechanical, or environmental engineering) and non-engineering disciplines (e.g., architecture, construction management, or environmental design). All admitted students are expected to have passed thermodynamics and fluid mechanics in their undergraduate studies. If students have not passed these courses, they may be required to take proficiency courses in their first year of study or in the summer before their first year of study. Each applicant will be evaluated on a case-by-case basis during the application review process to determine any proficiency course requirements.

Up to 12 credit hours of 400-level undergraduate coursework may be included in the program with adviser approval.

## Curriculum

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(12)</b>
CAE 513	Building Science <sup>1</sup>	3
CAE 526	Energy Conservation in Buildings <sup>2</sup>	3
or CAE 465	Energy Conservation in Buildings	
CAE 556	Net Zero Energy Building Design I	3
CAE 557	Net Zero Energy Building Design II	3
<b>Statistics/Data Analysis Requirement</b>		<b>(3)</b>
CAE 523	Statistical Analysis of Engineering Data	3
or MATH 474	Probability and Statistics	
or MATH 564	Regression	
or MMAE 500	Data Driven Modeling	
or BME 533	Biostatistics	
or STAT 514	Applied Computational Statistics for Analytics	
<b>Elective Courses</b>		<b>(15)</b>
Select 15 hours from the following: <sup>3</sup>		15
CAE 461	Plumbing and Fire Protection Design	3
CAE 466	Building Electrical/Lighting Systems Design	3
CAE 467	Lighting Systems Design	3
CAE 505	Applications of Computational Fluid Dynamics in Engineering <sup>2</sup>	3
or CAE 405	Applications of Computational Fluid Dynamics in Engineering	
CAE 506	Building Envelope Rehabilitation	3
CAE 515	Building Energy Modeling	3
or CAE 474	Introduction to Building Information Modeling	
CAE 517	HVAC Systems Design <sup>2</sup>	3
or CAE 464	HVAC Systems Design	
CAE 519	Structural Forensic Engineering	3
CAE 524	Building Enclosure Design <sup>2</sup>	3
or CAE 463	Building Enclosure Design	
CAE 538	Control of Building Environmental Systems <sup>2</sup>	3
or CAE 438	Control of Building Environmental Systems	
CAE 550	Applied Building Energy Modeling	3
CAE 552	Introduction to Sustainable Building Design	3
or CAE 462	Introduction to Sustainable Building Design	

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CAE 553	Measurement and Instrumentation in Architectural Engineering	3
CAE 554 or CAE 454	Building Commissioning <sup>2</sup> Building Commissioning	3
CAE 569 or CAE 470	Construction Methods, Cost Estimating, and Project Budgeting <sup>2</sup> Construction Methods and Cost Estimating	3
CAE 597	Special Problems	1-4
ENVE 503 or ENVE 403	Occupational and Environmental Health and Safety <sup>2</sup> Occupational and Environmental Health and Safety	3
ENVE 522 or ENVE 422	Global Environmental Change and Sustainability Analysis Global Environmental Change and Sustainability Analysis	3
ENVE 576	Indoor Air Pollution	3
MMAE 517	Computational Fluid Dynamics	3

**Total Credit Hours** **30**

- <sup>1</sup> Students who have previously passed an equivalent course in their prior degree programs may substitute another course for CAE 513 with adviser approval.
- <sup>2</sup> For courses that are cross-listed with both graduate and undergraduate sections, students in the program should prioritize taking the graduate (500-level) section. Accelerated master's students can take either section that best fits their plan of study.
- <sup>3</sup> Other elective courses in ARCH, CAE, CHE, CHEM, EG, EMS, ENVE, MMAE or other disciplines can also be taken with advisor approval.

Up to 12 credit hours of 400-level courses can be applied to the program.

A maximum of 4 credit hours of 597 Special Problems can be applied to the degree program.