

MASTER OF SCIENCE IN ARCHITECTURAL ENGINEERING

The Master of Science in Architectural Engineering is a research and thesis-based 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 both engineering practice and research rooted in the principles of building science, indoor environmental quality, energy efficiency, and sustainability. Students are expected to conduct research at a rigorous level beyond the coursework-only Master of Engineering in Architectural Engineering degree program. The program also serves as a foundation for students who intend to pursue a doctoral degree.

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.

Students in the program must complete a minimum of 32 credit hours in total, with 6 to 8 hours of thesis credits (CAE 591) awarded for successful completion of master's thesis milestones. Up to 12 credit hours of 400-level undergraduate coursework may be included in the program with adviser approval.

Curriculum

Degree candidates in the master of science program must complete a minimum of 32 credit hours, six to eight of which must be research and thesis credits. Up to 12 credit hours of 400-level undergraduate coursework may be included in the program with prior adviser approval. An oral defense of the thesis constitutes the comprehensive examination, and no additional written comprehensive examination is required.

Curriculum

Code	Title	Credit Hours
Required Courses		(6)
CAE 513	Building Science ¹	3
CAE 526	Energy Conservation Dsgn:Bldgs	3
Statistics/Data Analysis Requirement		(3)
CAE 523	Statistical Analysis Engg Data	3
or MATH 474	Probability and Statistics	
or MATH 564	Applied Statistics	
or MMAE 500	Data Driven Modeling	
or BME 533	Biostatistics	
Thesis Research		(6-8)
CAE 591	Research and Thesis M.S.	6-8
Architectural Engineering Elective Courses		(12)
Select a minimum of 12 credit hours from the following:		12
CAE 461	Plumbing/Fire Protection Dsgn	3
CAE 466	Building Electrical/Lighting	3
CAE 467	Lighting Systems Design	3
CAE 474	Intro Building Info Modeling	3
CAE 506	Building Env Rehab Engineering	3
CAE 515	BIM Applications for Bldg Perf	3
CAE 517	HVAC Systems Design	3
CAE 519	Structural Forensics	3
CAE 524	Building Enclosure Design	3
CAE 538	Control of Building Env. Sys.	3
CAE 550	Applied Bldg Energy Modeling	3
CAE 553	Measurement & Instrumentation	3
CAE 556	Zero Energy Building Design I	3
CAE 557	Zero Energy Building Design II	3

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CAE 569	Constr Meths Estimating Budget	3
ENVE 503	Occup Environ Health Safety	3
ENVE 576	Indoor Air Pollution	3
MMAE 517	Computational Fluid Dynamics	3
General Elective Courses		(3-5)
Select up to five credit hours of general electives ²		3-5

Minimum degree credits required: 32

¹ Students who have previously passed an equivalent course in their prior degree programs may substitute another course for CAE 513 with adviser approval.

² General electives can be taken in ARCH, CAE, CHE, CHEM, EG, EMS, ENVE, MMAE or other disciplines with advisor approval