

ARCHITECTURAL ENGINEERING

Integrated Undergrad-Grad Programs

Integrated Bachelor of Architectural Engineering (B.A.E.) and Master of Architectural Engineering (M.A.E.) or Master of Science (M.S.) in Architectural Engineering

This Integrated Undergraduate/Graduate (IUG) degree program combines the B.A.E. in Architectural Engineering with either M.A.E. or M.S. in Architectural Engineering offered at the following campuses:

Undergraduate Degree

- University Park

Graduate Degree

- University Park

Requirements listed here are in addition to requirements listed in GCAC-210 Integrated Undergraduate-Graduate (IUG) Degree Programs (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/gcac-210-integrated-undergraduate-graduate-degree-programs/>).

Admission Requirements

Applicants apply for admission to the program via the J. Jeffrey and Ann Marie Fox Graduate School application for admission (<https://gradschool.psu.edu/admissions/how-to-apply>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Qualified undergraduate students in the B.A.E. program will be considered for admission to one of two integrated undergraduate-graduate degree programs. The first leads to the student earning both the B.A.E. and M.A.E. degrees. The capstone project for the M.A.E. degree involves graduate-level work on the building that the student used for their undergraduate senior project. The second integrated degree option provides the student with the opportunity to earn both the B.A.E. and M.S. degrees and applies a six-credit research thesis. B.A.E./M.S. students must also complete the undergraduate senior project.

Students must apply to and meet admission requirements of the Graduate School, as well as the Architectural Engineering graduate program. Before applying to the Graduate School, students must have completed entrance to their undergraduate major and have completed no less than 60 credits. Students must be admitted no later than the end of the second week of the semester preceding the semester of expected conferral of the undergraduate degree. Transfer students must have completed at least 15 credits at Penn State to enroll in an IUG.

Application materials for both programs are available through the AE Department. To be considered for admission to either program, students must have attained an overall GPA of at least 3.0. Grades in AE courses will also be considered in the review of applications to the AE IUG programs. For admission to the B.A.E./M.S. program, a commitment from

an AE Graduate Faculty member to serve as the student's M.S. thesis adviser is required.

In consultation with an adviser, students must prepare a plan of study appropriate to their integrated program. Students must present their plan of study to the MAE program coordinator or the appropriate committee overseeing the integrated program prior to being admitted to the program. The plan should cover the entire time period of the integrated program, and should be reviewed periodically with an adviser as the student advances through the program. Any subsequent changes to a student's M.A.E. or M.S. course plan must receive approval from their MAE academic adviser and the MAE program coordinator.

Degree Requirements

Students admitted to an integrated program (B.A.E./M.A.E. or B.A.E./M.S.) must maintain a GPA in all classes used toward the M.A.E. or M.S. degree of at least 3.0. For both the integrated B.A.E./M.A.E. and B.A.E./M.S. degree programs, 30 credits of the 172 total credits required to receive both degrees are applied toward the master's degree, with up to 12 credits counting toward both degrees. For the B.A.E./M.S., a minimum of 18 credits is required at the 500 and 600 level combined. For the B.A.E./M.A.E., a minimum of 18 credits is required at the 500 and 800 levels, with at least 6 credits at the 500 level. For the B.A.E./M.A.E. degree program, all of the graduate credits are course credits, with AE 882 serving as the capstone project course for this program. For the B.A.E./M.S. degree program, a thesis is required and six credits of thesis research (AE 600 or AE 610) must be included in the candidate's academic course plan. Complete details on required courses, available electives, and other requirements related to these plans are provided in the Architectural Engineering Graduate Student Handbook for each of the undergraduate option areas.

The courses that can double-count for the B.A.E./M.A.E. are as follows:

Code	Title	Credits
Courses Eligible to Double Count for Both Degrees: B.A.E./M.A.E.		
AE 403	Advanced Steel Design for Buildings	3
AE 432	Design of Masonry Structures	3
AE 457	HVAC Control Systems	3
AE 458	Advanced Architectural Acoustics and Noise Control	3
AE 461	Architectural Illumination Systems & Design	3
AE 467	Advanced Building Electrical System Design	3
AE 473	Building Construction Management and Control	3
AE 476	Building Construction Engineering II	3
AE 530	Computer Modeling of Building Structures	3
AE 532	Post-Tensioned Concrete Building Design	3
AE 538	Earthquake Resistant Design of Buildings	3
AE 540	Computational Design & Optimization for Buildings	3
AE 542	Building Enclosure Science and Design	3
AE 551	Combined Heat and Power System Design for Buildings	3
AE 552	Air Quality in Buildings	3
AE 557	Centralized Cooling Production and Distribution Systems	3
AE 558	Centralized Heating Production and Distribution Systems	3
AE 562	Advanced Lighting System Modeling	3
AE 564	Color Science	3

AE 565	Daylighting	3
AE 566	Windows and Glazing	3
AE 570	Production Management in Construction	3
AE 573	Construction Automation and Robotics	3
AE 575	Virtual Facility Prototyping	3
AE 576	Building Information Modeling Execution Planning	3
AE 579	Sustainable Building Project Leadership	3

Commencement. If students accepted into the IUG program are unable to complete the M.A.E. or the M.S. degree, they are still eligible to receive their undergraduate degree if all the undergraduate degree requirements have been satisfied.

The courses that can be double-counted for the B.A.E./M.S. are as follows:

Code	Title	Credits
Courses Eligible to Double Count for Both Degrees: B.A.E./M.S.		
AE 403	Advanced Steel Design for Buildings	3
AE 457	HVAC Control Systems	3
AE 458	Advanced Architectural Acoustics and Noise Control	3
AE 461	Architectural Illumination Systems & Design	3
AE 467	Advanced Building Electrical System Design	3
AE 473	Building Construction Management and Control	3
AE 476	Building Construction Engineering II	3
BE 462	Design of Wood Structures	3
AE 530	Computer Modeling of Building Structures	3
AE 532	Post-Tensioned Concrete Building Design	3
AE 538	Earthquake Resistant Design of Buildings	3
AE 540	Computational Design & Optimization for Buildings	3
AE 542	Building Enclosure Science and Design	3
AE 546	Analysis & Design of Interdependent Building Systems through Data Analytics	3
AE 551	Combined Heat and Power System Design for Buildings	3
AE 552	Air Quality in Buildings	3
AE 557	Centralized Cooling Production and Distribution Systems	3
AE 558	Centralized Heating Production and Distribution Systems	3
AE 562	Advanced Lighting System Modeling	3
AE 564	Color Science	3
AE 565	Daylighting	3
AE 566	Windows and Glazing	3
AE 570	Production Management in Construction	3
AE 572	Project Development and Delivery Planning	3
AE 573	Construction Automation and Robotics	3
AE 575	Virtual Facility Prototyping	3
AE 579	Sustainable Building Project Leadership	3

At least 6 of the double-counted credits must be at the 500- or 800-level. Independent study courses and credits associated with the culminating experience for the graduate degree cannot be double-counted.

Students are expected to complete the undergraduate degree requirements within the typical time to degree for the undergraduate major. In the semester in which the undergraduate degree requirements will be completed, IUG students must apply to graduate, and the undergraduate degree should be conferred at the next appropriate