

Courses currently offered:

430: Indeterminate Structures
431: Advanced Concrete Design Building
432: Design of Masonry Structures
445: Building Retuning
453: Load and Energy Simulation
454: Advanced HVAC
455: Advanced HVAC Design
456: Solar Energy Building System Design
457: HVAC Controls
458: Advanced Acoustics
459: Measurement Science for High Performance Building Systems
461: Architectural Illumination Systems & Design
464: Advanced Architectural Illumination Systems & Design
466: Computer Aided Lighting & Design
467: Advanced Building Electrical Systems
468: Building Electrical and Communication Systems
470: Residential Building Design & Construction
471: Construction Management of Residential Building Projects
472: Building Construction Planning & Management
473: Building Construction Management Control
475: Building Construction Engineering I
476: Building Construction Engineering II
530: Computer Modeling of Building Structures
531: Legal Aspects of Engineering and Construction
534: Analysis and Design of Steel Connections
535: Historical Structural Design Methods
537: Building Performance Failures and Forensic Techniques
538: Earthquake Resistant Design of Buildings
542: Building Enclosure Science and Design
543: Research Methods in Architectural Engineering
551: Combined Heat and Power System Design for Buildings
552: Air Quality in Buildings
553: Building Energy Analysis
555: Building Automation and Control Systems
556: Solar Engineering of Thermal Processes
557: Centralized Cooling Production and Distribution Systems
558: Centralized Heating Production and Distribution Systems
559: Computational Fluid Dynamics in Building Design
561: Science of Light Sources
562: Luminous Flux Transfer
563: Luminaire Optics
565: Daylighting
570: Production Management in Construction
571: International Construction Management and Planning
572: Project Development and Delivery Planning
579: Sustainable Building Project Leadership
581: Facilities Management Information Systems



Master's in Architectural Engineering Degree

Ultra-High-Performance Buildings Emphasis

For students recommended and sponsored by home governments to prepare for their future service.

The Penn State Architectural Engineering (AE) Department, ranked globally at the top of its field, is offering a Master of Engineering (M.Eng.) degree program specifically crafted for buildings professionals, policy makers, and regulators worldwide who are selected and sponsored by their governments to prepare for leadership roles in building transformation in their home country.



PennState
College of Engineering

**ARCHITECTURAL
ENGINEERING**



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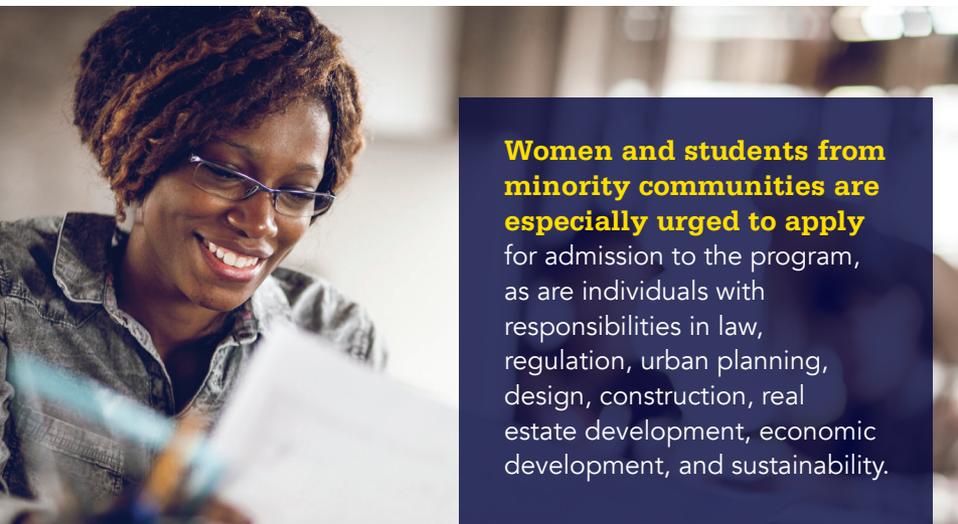
**ARCHITECTURAL
ENGINEERING**

The goal of the program is to bring together the best minds from around the world to work collaboratively in an innovation ecosystem to collectively develop solutions to the most pressing infrastructure engineering problems around the world.

This program will provide the most advanced training, built around a demanding 30-credit core curriculum in ultra-high-performance buildings, and is tailored to prepare each student to develop solutions that address the specific needs of the home country and the responsibilities the student will assume at home upon completion of the degree.

The program is part of Penn State's expanding UN-focused effort to support worldwide transformation of the building sector to ultra-high-performance buildings as envisioned by the **United Nations Ultra-High-Performance Building Initiative**, administered by the United Nations Economic Commission for Europe.

The 12-month program of study will launch in the fall 2019 semester as an intensive one-year initiative, with students graduating at the end of the summer 2020 semester. Students should have undergraduate training in engineering or other related disciplines that cover thermodynamics, solid mechanics, and/or illumination.



Women and students from minority communities are especially urged to apply for admission to the program, as are individuals with responsibilities in law, regulation, urban planning, design, construction, real estate development, economic development, and sustainability.

ADMINISTRATION

Applications must be submitted to the Penn State Graduate School by April 15 or September 15 of each year, accompanied by three letters of recommendation and the results of applicants' Graduate Record and Test of English as a Foreign Language (TOEFL) Examinations.

ae.psu.edu



Penn State consistently ranks in the top 1% of institutions worldwide.

Visit stats.psu.edu for a statistical snapshot of the University.



CURRICULUM

All students will gain core knowledge in four key areas. This core curriculum involves four three-credit courses:

- **Core Knowledge #1:** Building Systems Integration: Envelope, Thermal, Mechanical, and Energy Sourcing (3 credits)
- **Core Knowledge #2:** Lighting, Daylighting, Envelope, and Controls (3 credits)
- **Core Knowledge #3:** Occupant Behavior and Building Responsiveness to Occupants and Environment (3 credits)
- **Core Knowledge #4:** Sensors, Data Science, Performance Assessment, and Smart Building Management (3 credits)

In addition, students will, in collaboration with their home governments, participate in two "hands on" practicum courses (3 credits each) to serve as a cornerstone and capstone for their curriculum. The practicum course content will vary based on each students' specific challenges in which the student will be engaged upon return to their home country, which will be part of the application process. Topics can include technical, legal, regulatory, financial, or other dimensions of the building stock transformation challenge. The cornerstone and capstone courses must be approved by the AE department prior to matriculation and will be taken in the first (fall) and third (summer) semesters, respectively.

Four additional three-credit courses, for a required total of 30 credit hours, will be selected from courses offered by the AE department or other departments within the University offering instruction relevant to students' objectives, with offerings ranging from community development, policy, and law to real estate and other branches of engineering. All selections and overall curriculum design must be approved by the AE department.

The M.Eng. degree program in architectural engineering at Penn State combines key core competencies with wide ranging substantive flexibility. It is designed to create tailored collaboration among students, home governments, and Penn State in developing the knowledge and skills required to lead building sector transformation. Special provisions can be made for either background training in areas not covered by prior education or to offer students opportunities for highly advanced work in areas of special interest.