

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 Building

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

The Penn State Architectural Engineering (M.Eng.) degree program is ranked globally at the top of its field, is crafted for buildings professionals, policy regulators worldwide who are selected by their governments to prepare for leading building transformation in their home countries.



PennState
College of Engineering

**ARCHITECTURAL
ENGINEERING**

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PennState
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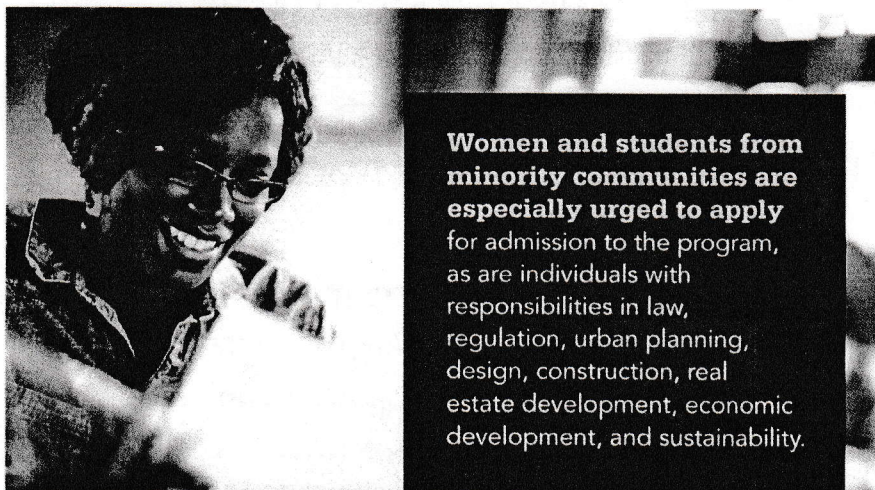
**AR
EN**

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.

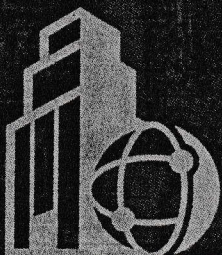


Women and students from minority communities are especially urged to apply for admission to the program, as are individuals with responsibilities in law, regulation, urban planning, design, construction, real estate development, economic development, and sustainability.

ADMINISTRATION

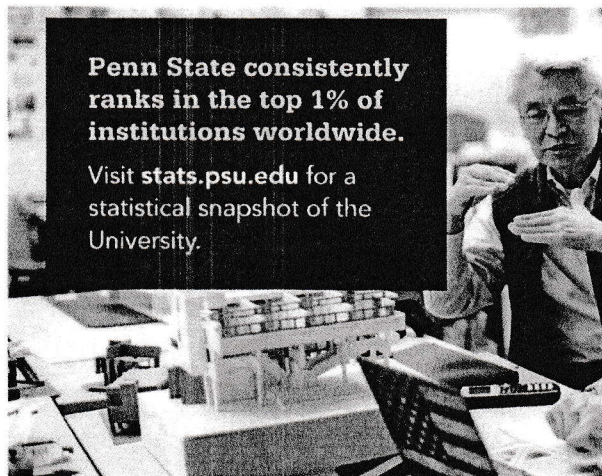
Applications must be submitted to the Penn State Graduate School by April 15 or September 15 of each year, accompanied by three letters of recommendation and the results of applicants' Graduate Record and Test of English as a Foreign Language (TOEFL) Examinations.

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. The curriculum involves four three-credit courses:

- **Core Knowledge #1:** Building Systems Integration: Thermal, Mechanical, and Energy Sourcing (3 credits)
- **Core Knowledge #2:** Lighting, Daylighting, and Environmental Quality (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 of the curriculum. The practicum course content will vary to address students' specific challenges in which the student will be engaged upon return to their home country, which will be part of the capstone process. Topics can include technical, legal, regulatory, and other dimensions of the building stock transformation. The cornerstone and capstone courses must be approved by the department prior to matriculation and will be taken during the first (fall) and third (summer) semesters, respectively.

Four additional three-credit courses, for a total of 12 credit hours, will be selected from courses offered by the other departments within the University offering in accordance with students' objectives, with offerings ranging from building development, policy, and law to real estate and other related engineering. All selections and overall curriculum must be approved by the AE department.

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