College of Engineering

Architectural Engineering

Overview

Architectural engineers bring together various technologically advanced building systems and make them all work together as an integrated whole. They must be aware of the practical, functional and aesthetic possibilities of contemporary materials and mechanical, electrical and structural systems to assure proper building systems integration.

As an important member of the building design team, the engineer must be able to create designs that will satisfy the economic, safety, environmental, sustainability and aesthetic requirements of a project as well as assure that the design complies with various design standards and building codes.

Professional options

Careers

Graduates of this program are in tremendous demand. Architectural engineering opens the door to a variety of interesting jobs with high starting salaries and exciting careers. Some possible careers:

- Engineering consultants in building, mechanical, electrical or structural design work independently or in association with an architectural or engineering firm.
- Mechanical designers engineer heating, ventilating, air conditioning, plumbing and fire protection systems for buildings.
- Electrical designers engineer power distribution, lighting and building communication and control systems.
- Structural designers engineer foundation, framing and building envelope systems.
- Architectural engineers aid the development and marketing of new building products and technology.

Senior students in this program are eligible to take the Fundamentals of Engineering examination to qualify as an engineer-in-training. Successful completion of this examination allows them to pursue the professional registration examination to become a licensed professional engineer.

Academics

Architectural engineering at Kansas State University is a five-year program in building systems. It covers engineering design theory and how to apply these tools to create completely functional buildings.

Students will complete courses in mathematics and engineering science, as well as take courses in materials, construction drawings, architectural design and all building systems. Students will graduate with a basic competency in structural, mechanical and electrical design for buildings and may, upon selection of the proper technical electives, strengthen personal and professional knowledge in any of these areas.

The primary goal of most students is to practice as a consulting engineer in one or more of the engineering disciplines noted above.

Degree options

Bachelor/Master of Science

A combination bachelor’s and master’s degree program is only offered to undergraduates in architectural engineering. This professional Master of Science degree challenges top students with research experiences, faculty mentoring and advanced coursework. The program gives the student an opportunity to specialize in an emphasis area of systems engineering applied to building design and analysis. Current emphasis areas include: mechanical systems, electrical power distribution, illumination and building structural design.

Accreditation

The program is one of a small number of programs accredited by the Engineering Accreditation Commission of ABET, abet.org, and is a leading source of building system design engineers for consulting engineering firms.

Faculty

Architectural engineering faculty members are licensed professional engineers and architects or experts in their area or discipline. They have significant industry experience they bring into the classroom to facilitate the understanding and practical application of engineering theory. The faculty members keep up to date on building codes and design standards to assure students graduate with the most current understanding of engineering design requirements. The department faculty members have won numerous teaching and advising awards as a result of their dedication to students and their commitment to quality engineering and construction education.

Admission

Admission is selective based on academic performance. Submit application, application fee, all transcripts and ACT or SAT scores postmarked by the priority Feb. 1 deadline. Transfer students will be considered for all terms. Freshmen will be considered only for summer and fall terms.

Preprofessional program

Incoming students apply to Kansas State University through the general university admissions process. When enrolling in courses, those wishing to declare a major in architectural engineering may enroll directly in the curriculum titled ARE and start in the preprofessional program.

Professional program

Preprofessional architectural engineering students must complete the first three semesters of the program before taking any upper-level professional program courses in architectural engineering. The criteria for acceptance to the professional program are outlined in the undergraduate catalog.

Points of pride

The K-State architectural engineering student competition teams have combined to win at least one first-place award in national competitions for five consecutive years. The teams are regularly finalists in national competitions sponsored by the Architectural Engineering Institute and the American Society of Heating, Refrigerating and Air Conditioning Engineers and the American Concrete Institute.
Graduate program
Master of Science
The minimum requirement for coursework is 30 semester hours of graduate credit with options as specified in the catalog and required undergraduate work in an ABET-accredited engineering program and subject to the approval of the department. More information is available on the department’s website.

Activities
Clubs
The department offers many active student professional organizations with ample opportunity for involvement and leadership, as well as interaction with industry professionals, field trips, scholarships and student competition teams. These student-run organizations include:
- Architectural Engineering Institute
- American Society of Heating, Refrigerating and Air-Conditioning Engineers
- Illuminating Engineering Society
- Structural Engineers Association of Kansas and Missouri
- Mechanical Contractors Association of America
- American Concrete Institute
- Phi Alpha Epsilon-Architectural Engineering Honor Society
- Department Student Ambassadors

Financial assistance
Applications for admission are accepted up to 15 months before the first class day each semester. Apply for admission and fill out the Kansas State University scholarship application at k-state.edu/admit/apply.

The priority deadline for incoming freshmen to submit the K-State scholarship application is Nov. 1, or Feb. 1 for transfer students. Students submit the K-State scholarship application to 15 months before the first class day each semester. Apply for admission and fill out the Kansas State University scholarship application at k-state.edu/admit/apply.

For more information about architectural engineering, contact:
Department of Architectural Engineering and Construction Science
Kansas State University
240 Seaton Hall
920 N. 17th St.
Manhattan, KS 66506-2903
785-532-5964
Fax: 785-532-3556
arecns@k-state.edu
are-cns.k-state.edu
engg.k-state.edu

For more information about engineering, contact:
Office of Recruitment
College of Engineering
1701D Platt St.
Kansas State University
1141 Engineering Hall
Manhattan, KS 66506-5201
785-532-5455
kstateengg@k-state.edu
engg.k-state.edu

K-State Engineering
For more information about Kansas State University, contact:
Office of Admissions
Kansas State University
119 Anderson Hall
919 Mid-Campus Drive North
Manhattan, KS 66506-0102
1-800-432-8270 (toll free) or 785-532-6250
k-state@k-state.edu
Manhattan, KS 66506-0102

Notice of nondiscrimination
Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the University’s programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University’s Title IX Coordinator: the Director of the Office of Institutional Equity, equpty-k-state.edu, 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6220. The campus ADA Coordinator is the Director of Employee Relations, charlott@k-state.edu, 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277.

Post-Graduation Statistics
k-state.edu/postgrad-stats
ksdegreestats.org

Suggested coursework
Bachelor of Science degree in architectural engineering (128 hours)

Preprofessional program
Hrs. First semester
0 ARE 201 Architectural Engineering Seminar
2 ARE 100 Architectural Engineering Orientation
3 CNS 110 History of Building and Construction
4 CHM 210 Chemistry I
4 MATH 220 Analytical Geometry and Calculus I
2 COMM 105 Public Speaking IA
15

Second semester
Hrs. Second semester
0 ARE 020 Architectural Engineering Seminar
1 CNS 210 Graphic Communications I
2 CNS 220 Construction Materials
5 PHYS 213 Engineering Physics I
4 MATH 221 Analytical Geometry and Calculus II
3 ECON 110 Principals of Macroeconomics
18

Third semester
Hrs. Third semester
0 ARE 020 Architectural Engineering Seminar
3 ARE 295 Building Systems Introduction
5 PHYS 214 Engineering Physics II
3 CE 333 Statics
3 ENGL 200 Expository Writing II
4 MATH 222 Analytic Geometry and Calculus III
18

Fourth semester
Hrs. Fourth semester
0 ARE 020 Architectural Engineering Seminar
3 CNS 321 Science elective
3 ME 513 Thermodynamics
3 CE 533 Mechanics of Materials
1 CE 534 Mechanics of Materials Lab
4 MATH 240 Elementary and Differential Equations
17

Fifth semester
Hrs. Fifth semester
0 ARE 020 Architectural Engineering Seminar
3 ARE 460 Architectural Engineering Professional Practice
3 ARE 551 Electrical Systems I
3 ARE 552 Mechanical Systems I
3 ARE 553 Structures I
3 CE 537 Introduction to Structural Analysis
15

Sixth semester
Hrs. Sixth semester
0 ARE 020 Architectural Engineering Seminar
3 ARE 421 Plan Reading and Systems Communications
2 ARE 521 Computer-Aided Architectural Engineering
3 ARE 521 Electrical Systems II
3 ARE 562 Mechanical Systems II
3 ARE 563 Structures II
3 ART 180 2D Design
or ART 190 Drawing I
or ART 200 3D Design
17

Seventh semester
Hrs. Seventh semester
0 ARE 020 Architectural Engineering Seminar
3 ARE 571 Systems Integration and Design
3 ENGL 415 Writ Comm Engineers
3 Complementary elective**
3 Complementary elective**
3 Complementary elective/engineering elective***
15

Eighth semester
Hrs. Eighth semester
0 ARE 020 Architectural Engineering Seminar
4 ARE 671 Architectural Engineering Capstone
3 Engineering elective***
3 Engineering elective***
3 Complementary elective**
3 Humanities and social science elective*
16

*Humanities and social science electives are to be selected from the College of Engineering humanities and social science elective course list.
** Complementary electives are to be selected from the approved departmental list.
*** Engineering electives are to be selected from the current approved departmental list.
**** Science electives are to be selected from the current approved departmental list.

Notice of nondiscrimination
Kansas State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, ancestry, disability, genetic information, military status, or veteran status, in the University’s programs and activities as required by applicable laws and regulations. The person designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University’s Title IX Coordinator: the Director of the Office of Institutional Equity, equpty-k-state.edu, 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6220. The campus ADA Coordinator is the Director of Employee Relations, charlott@k-state.edu, who may be reached at 103 Edwards Hall, Kansas State University, Manhattan, Kansas 66506, (785) 532-6277.

Post-Graduation Statistics
k-state.edu/postgrad-stats
ksdegreestats.org