



Guide to Majors and programs

Engineering

The award-winning College of Engineering at K-State is the largest and most comprehensive in the region. The college offers 11 Bachelor of Science degree programs and many additional options in the individual departments. With studies covering virtually the entire engineering spectrum, students may, by the use of technical electives, pursue one or more options or areas of special interest.

Mission statement

The College of Engineering serves the citizens of Kansas, the nation and the world by providing world-class educational, research and service programs where students and faculty can develop in their chosen disciplines and advance as successful leaders and professionals.

Architectural engineering

Architectural engineers design electrical, mechanical, fire protection, plumbing, acoustical, lighting and structural systems for buildings.

Biological systems engineering

Biological systems engineers apply engineering, physical and biological principles to living systems. This includes producing food, fiber and energy, manufacturing materials and designing equipment.

They also emphasize protecting the natural environment by utilizing and enhancing natural processes. Program options can be used to pursue advanced degrees in medicine or law.

Chemical engineering

Chemical engineers use mathematics and science, especially chemistry and biology, to design and manufacture products like fuel, medicine, plastics, paper, food and semiconductors. They also have substantial roles in environmental protection, biotechnology, business management, software development, technical sales and research. Areas of specialization include biotechnology, energy and fuels, environmental, materials science and engineering, and pre-medicine.

Civil engineering

Civil engineers impact lives every day. They play a key role in sustaining society by supplying clean water, by treating waste, by managing water resources, by connecting communities through reliable networks of roads, highways and bridges, by providing shelter to growing urban populations, and by restoring critical infrastructure after natural and man-made disasters. Construction, structures, environmental and transportation/materials are options within civil engineering.

Computer engineering

Computer engineers deal with hardware and software and their interactions in architecture, embedded and networking systems. Students trained in computer engineering have a diverse choice of career paths including design, application, testing, networking and sales.

Computer science

Computer scientists design algorithms and software systems that automate solutions to societal problems. Examples include the software that controls brakes in your car and flight control in airplanes, pacemakers, the virtual world of video games and movies, and the processing of biological data to match DNA samples and develop new life-saving drugs. Software engineers design the processes to integrate hardware and software components that implement these solutions.

Construction science and management

The program is an engineering-based management program designed to produce a professional constructor, a technically competent manager of resources including manpower, material, equipment, scheduling and costs.

Electrical engineering

Electrical engineers design systems that deal with electricity or electronics. This includes microchip technology; bioengineering; wireless communication systems; digital and analog electronics; power generation and distribution; and transmission, conversion and processing of energy and information.

Industrial engineering

Industrial engineers, or IEs, design and improve the way goods and services are produced and delivered. They improve product quality, individual and system productivity, and design safe work environments. IEs are concerned with the effective utilization of all organizational resources to maximize system productivity. IEs work to eliminate waste of time, money, materials, energy and other commodities.

Information systems

This program focuses on the technical computing, networking and Web-centric concepts that implement business information systems. These graduates design and build business-oriented software that automates business processes.

Mechanical engineering

Mechanical engineers design machines and systems for the conversion, control and transfer of energy. They work with equipment design and manufacturing, computer controls, environmental systems, machine design, heat transfer, system dynamics and control, robotics, structural dynamics and stability, air conditioning, solar energy, and computer-aided graphics and design. The aerospace industry is an area of special interest.

Nuclear engineering is an option in mechanical engineering. Nuclear engineers design systems that deal with radiation. They work in nuclear power plant design and operations, energy resource management, radiation protection, radiation effects on materials, and radioisotopic applications in medicine or biological research.

Special programs

Professional experience

After completion of your freshman year, you may participate in the cooperative education program, an industrial internship or summer employment in an industrial setting. While acquiring valuable engineering experience, you earn a significant portion of your college expenses.

Interdisciplinary studies

Students may earn dual degrees, and many find engineering an excellent foundation for graduate studies in professions such as law, business, medicine and teaching.

Minors

A minors program, officially recognized on your transcript, enables you to take 15 credit hours or more in an area of special interest outside your major field. Minors available include:

- Biology
- Chemistry
- Computer science
- Leadership
- Manufacturing systems

Honors

The honors program is open to students with superior academic records and culminates as a senior with research projects emphasizing engineering applications.

Leadership certificate

This program provides a structured learning experience for undergraduate students interested in exploring technical leadership, participation in personal and professional development activities, and developing lifelong learning skills.

Integrated B.S.–M.S.

Students who have completed their sophomore year with outstanding scholastic records are eligible to participate in a five-year integrated program leading to a Bachelor of Science and a Master of Science in some of the engineering fields. Program features are:

- Integrated planning
- Participation in research
- Enrollment in graduate-level courses in the senior year
- Consideration for financial assistance in the form of scholarships, fellowships, research assistantships and part-time work

Multicultural Engineering Program

MEP supports the success of multicultural students by focusing on professional development, academic development and recruitment efforts. MEP fosters both academic and leadership development and assists with the transition to employment upon graduation. MEP services include:

- Academic, personal and career advising
- Scholarships
- Leadership Opportunities
- Engineering orientation classes
- Job placement assistance for internships and full-time employment
- Professional and peer mentoring

Women in Engineering and Science Program

WESP is a joint venture between the colleges of engineering and arts and sciences to support women pursuing their interests in science and engineering. WESP is a catalyst for providing support, building community and promoting awareness.

Retention programs

Retention programs focus on increasing the retention of engineering and science students through the following initiatives:

- **Scholars Assisting Scholars:** Employs exceptional students to staff a tutoring program.
- **CONNECT:** Creates linkage with family and friends of students to support student success.

Accreditation

All of our engineering degree programs are accredited by the Engineering Accreditation Commission of ABET, www.abet.org. Construction science and management is accredited by the American Council for Construction Education, 1717 North Loop 1604 East, Suite 320, San Antonio, TX 78232-1570. The computer science degree is accredited by the Computing Accreditation Commission of ABET, www.abet.org.

For more information about engineering, contact:

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KANSAS STATE UNIVERSITY

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