College of Engineering

General Engineering

Overview
The award-winning College of Engineering at Kansas State University is the largest in the state. The college is very comprehensive, offering 10 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.

Professional options

Careers
Architectural engineering
Architectural engineers play a key role in the design, engineering and construction of buildings. They are a valued member of the architect, engineer and constructor team to ensure building systems integration. Architectural engineers design electrical, mechanical, plumbing, fire protection, 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 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; treating waste; managing water resources; connecting communities through reliable networks of roads, highways and bridges; providing shelter to growing urban populations; and restoring critical infrastructure after natural and man-made disasters. Construction, structures, environmental and transportation/materials are options within civil engineering.

Computer engineering
Computer 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.

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
Ever-changing technological advancements in the construction industry demand competent and technically skilled managers of construction. Construction professionals build buildings, highways, bridges, homes, utility systems and specialty construction by successfully managing manpower, material, equipment, schedules and costs, which are the key resources under their control. The program is an engineering-based management program designed to produce graduates who understand the construction materials, assemblies, process and technology as well as the business and management aspects of construction industry.

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 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. Industrial engineers are concerned with the effective utilization of all organizational resources to maximize system productivity. They work to eliminate waste of time, money, materials, energy and other commodities.

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.

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

Academics

Degree options
 Incoming freshmen who are undecided in their major in engineering may enroll in general engineering for the first year, but it is not a degree program. General engineering coursework is completely applicable to all engineering programs, and students are encouraged to select a major by the beginning of their sophomore year.
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.

Biological, environmental and medical connection
The College of Engineering provides multiple options for study and training in biological, environmental and health care engineering. Learn more at engg.ksu.edu/rdi/bio-connection.

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. Available minors include:
- Business
- Chemistry
- Computer science
- Economics
- Leadership
- Modern languages

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.

Accreditation
All of our engineering degree programs are accredited by the Engineering Accreditation Commission of ABET, 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, abet.org.

Activities
Multicultural Engineering Program
This organization supports the success of multicultural students by focusing on professional development, academic support and recruitment efforts. MEP fosters both academic and leadership development and assists with the transition to employment upon graduation.

Services include scholarships, leadership opportunities, engineering orientation classes, job placement assistance, and professional and peer mentoring.

University Honors Program
The University Honors Program is open to students with superior academic records and culminates in the senior year with research projects emphasizing engineering applications.

Women in Engineering program
The mission of the Women in Engineering program, or WiE, is to support women engineering students academically, socially and professionally. WiE includes:
- Seminars for women in engineering.
- Department student organizations such as Mechanical and Nuclear Engineering Women and Women in Civil Engineering.
- Engineering women mentoring women.

Retention programs
Retention programs focus on increasing the retention of engineering students through the following initiatives:
- Scholars Assisting Scholars, or SAS, which employs exceptional students to staff a free tutoring program.
- CONNECT, an informative electronic newsletter for family and friends of students to support student success.

Study abroad
Study abroad is highly recommended. It is a great opportunity to gain insights into other cultures as well as our own.

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.

Financial assistance
The priority deadline for incoming freshmen to submit the K-State scholarship application is Nov. 1, or Feb. 1 for transfer students. Students should submit their Free Application for Federal Student Aid by March 1. For additional details, visit k-state.edu/sfa/scholarships. For information on the College of Engineering scholarship program, visit engg.k-state.edu/future-students/engineering-scholarships.

Suggested coursework
Freshman
Fall semester (15 hours)

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<th>Hrs.</th>
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<tr>
<td>1</td>
<td>DEN 160 Engineering Concepts</td>
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<tr>
<td>4</td>
<td>CHM 210 Chemistry I</td>
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<tr>
<td>3</td>
<td>ENGL 100 Expository Writing I</td>
</tr>
<tr>
<td>4</td>
<td>MATH 220 Analytical Geometry and Calculus I</td>
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<tr>
<td>3</td>
<td>Humanities/social science elective</td>
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Spring semester (16 hours)

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<th>Hrs.</th>
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<tr>
<td>4</td>
<td>CHM 230 Chemistry II</td>
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<tr>
<td>4</td>
<td>MATH 221 Analytical Geometry and Calculus II</td>
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<tr>
<td>3</td>
<td>ECON 110 Principles of Macroeconomics</td>
</tr>
<tr>
<td>2</td>
<td>COMM 105 Public Speaking 1A</td>
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<tr>
<td>3</td>
<td>Humanities/social science elective</td>
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For more information about engineering, contact:
Office of Recruitment
College of Engineering
Kansas State University
1141 Engineering Hall
1701D Platt St
Manhattan, KS 66506-5201
785-532-5455
kstateengg@k-state.edu
engg.k-state.edu