Agricultural Technology Management, BS & Biological Systems Engineering, BS & Environmental Engineer

Kansas State University

Johnson County Community College Transfer Program to the Kansas State University	College of Engineering Student Services
College of Engineering	785-532-5592
Agricultural Technology Management (BS), Biological Systems Engineering (BS) & Environmental Engineering (BS)	engineering@k-state.edu
	https://engg.ksu.edu/academics/undergraduate/

Program Description

The goal of the **agricultural technology management** program is to educate technology managers who can combine the critical understanding of agriculture and biological sciences with the problem-solving viewpoint of an engineer. The curriculum is intended for students who want a broader education than is provided by the engineering curriculum and who do not desire the analytical focus necessary in an engineering degree. Graduates fill key positions in food and agricultural industries, serving as technical managers for these increasingly vital sectors of the economy. Five curriculum options are available: agribusiness management option, biomanufacturing option, precision agriculture option, production agriculture option and water management option.

Biological systems engineers provide an essential link between biological sciences and engineering, which uses physical, chemical and advanced biological sciences to solve practical problems. Biological systems engineers develop techniques and processes to work with living systems, including microbes, plants and animals. They provide input to produce and process food, fiber, energy, chemical feedstock and pharmaceuticals. Engineering fundamentals are applied to achieve the goal of a safe and stable food and renewable energy supply while considering human and environmental factors. Three curriculum options are available: biological option, environmental option and machinery systems option.

Environmental engineers design systems and solutions to sustain the quality of people's lives and the planet. As environmental challenges continue to develop, these professionals will increasingly be called upon to sustain food, water and energy supplies, curb climate change and adapt to its impact, reduce pollution and waste of natural resources, advance green manufacturing, develop resilient urban infrastructure systems and improve waste management practices. Environmental engineering integrates engineering fundamentals, mechanics and design principles with biology, earth sciences and chemistry to design solutions that improve the well-being of people and planet where the two intersect. Three curriculum options are available: sustainable ecosystems, water resources and water/wastewater treatment.

Admission Requirements

- **Admissions -** Applicants must first be admitted to Kansas State University either as an incoming freshman or a transfer student. To apply for admission to Kansas State University, complete an application (https://www.k-state.edu/admissions/) online and have official transcripts from all previous colleges sent directly to the Office of Admissions, Kansas State University, 119 Anderson Hall, Manhattan, KS, 66505-0102, or faxed to 785-532-6393 or emailed via electronic transcript service to k-state@k-state.edu. (k-state@k-state.edu) For students transferring to K-State with fewer than 24 credit hours, please also send final high school transcript and ACT or SAT scores. Admission to the College of Engineering is selective. Declaration of the desired curriculum in the College of Engineering does not guarantee admission into the degree program selected. Visit the College of Engineering (https://engg.k-state.edu/academics/admissions/) for current admission information.
- Students not admitted to the College of Engineering can enter the university Exploratory Studies program or another available college/degree program. These students can still apply to enter the College of Engineering at a later date after they have completed one full-time semester at K-State as an internal transfer student.
- **Grade requirements -** In addition to the university standards and policies for grades, the College of Engineering has the following standards:
- **Curricula grades -** See the individual engineering department sections of the K-State Undergraduate Catalog (https://catalog.k-state.edu/) for the grade requirements for their curriculum and degree. All courses applied to degree requirements require a letter grade except for 0-credit hour assembly courses.
- **DirectLink** - an initiative between Kansas community colleges and Kansas State University to provide future transfer students with support as they prepare to make the transition to K-State. Visit DirectLink (https://apply2.ksu.edu/register/directlink/) to register.
- **Transferability of Courses -** Many of the fundamental courses required for a degree in engineering may be obtained through pre-engineering programs at other four-year institutions or at community colleges. However, there are differences among the curricula; students electing this route should work closely with their pre-engineering advisors**. Students should be aware that no more than seventy-five hours may be transferred as credit from a community college, at least 30 credit hours must be K-State credit hours, and 15 of the last 30 must be K-State credit hours.** Only courses with a grade of A, B or C will be applicable toward engineering degree requirements. *The Cr and D grades are not acceptable for transfer into College of Engineering programs.*
- Some K-State courses in the curriculum do not have an equivalent course at all other institutions. Please see the K-State Undergraduate Catalog (https://catalog.k-state.edu/) for details and lists of courses. To learn more about academic credit for prior learning and advanced credit, please visit K-State Advanced Standing (https://www.k-state.edu/admissions/undergrad/manhattan/apply/policies-requirements/advanced-standing-credit/) credit options.
- To determine which courses at a particular college or university will substitute for courses at K-State, visit Transfer Equivalency (https://go.k-state.edu/equiv/) on the K-State website.
- Students transferring to KSU, that complete the General Education requirements required for the Associate of Arts (AA) (https://catalog.jccc.edu/degreerequirements/associate-arts/), Associate of Fine Arts (AFA) (https://catalog.jccc.edu/degreerequirements/associate-fine-arts/) or Associate of Science (AS) (https://catalog.jccc.edu/degreerequirements/associate-science/) degree from JCCC will be considered to have satisfied KSU's core general education curriculum.
- Students who transfer to KSU, without completing the General Education requirements required for the Associate of Arts (AA) (https://catalog.jccc.edu/degreerequirements/associate-arts/), Associate of Fine Arts (AFA) (https://catalog.jccc.edu/degreerequirements/associate-fine-arts/) or Associate of Science (AS) (https://catalog.jccc.edu/degreerequirements/associate-science/) degree will have courses evaluated on a course-by-course basis toward meeting KSU requirements. To learn more about courses that satisfy KSU Core Requirements (https://catalog.k-state.edu/content.php?catoid=60&navoid=12133) and KSU Transfer Equivalency Tool (https://www.k-state.edu/admissions/undergrad/manhattan/apply/transfer/tools/course-search.html).
- Visit the KSU Core General Education Guide (https://nam12.safelinks.protection.outlook.com/?url=http%3A%2F%2Fnextcatalog.jccc.edu%2Ftransfer-guides%2Fk-state%2Fk-state-general-education&data=05%7C02%7Cskhalif2%40jccc.edu%7C3bbbe8fc84564328cf7008de1320415e%7C15244239dcf245e7aefd127b69fc5438%7C1%7C0%7C638969226426376370%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=p6L6HF0HBpB3aL3uFUWnztw8qzBp%2FiSMV2qlS%2FvLwxE%3D&reserved=0) for JCCC equivalents.

Program Requirements

Agricultural Technology Management (ATM) (B.S.) 120 hours required for the K-State B.S. degree

The curriculum for this major assumes students enter college prepared to take Calculus.

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
English (two courses) Visit the KSU Core General Education guide for JCCC equivalents.					
Communications Visit the KSU Core General Education guide for JCCC equivalents.					
Math and Statistics MATH 205 General Calculus Visit the KSU Core General Education guide for JCCC equivalents.					
MATH 231	Business and Applied Calculus I*	3	MATH 205	Calc for Business Economics	3
Natural and Physical Sciences Visit the KSU Core General Education guide for JCCC equivalents.					
PHYS 130	College Physics I*	5	PHYS 113	General Physics I	4
Social and Behavioral Sciences (Select two courses in two subject areas – 6 hours total) Visit the KSU Core General Education guide for JCCC equivalents.					
ECON 230	Principles of Macroeconomics	3	ECON 110 & ECON 111	Principles of Macroeconomics and Prin of Macroeconomics Honors	3
Arts and Humanities (Select two courses in two subject areas) Visit the KSU Core General Education guide for JCCC equivalents.					
Free Electives (Any 100 or 200 level courses may apply) Visit the KSU Core General Education guide for JCCC equivalents.					

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
ACCT 222	Managerial Accounting*	3	ACCTG 231	Intro to Managerial Accounting	3
BIOL 135	Principles of Cell and Molecular Biology	4	BIOL 198	Principles of Biology	4
BUS 241	Principles of Management	3	MANGT 220 & MANGT 420	Principles of Management and Principles of Management	3
CHEM 124 & CHEM 125	General Chemistry I Lecture* and General Chemistry I Lab*	4	CHM 210 & CHM 220	Chemistry I and Honors Chemistry I	5
ENGR 131	Engineering Graphics I:AutoCAD* (Graphics Elective)	4	ME 212 Engineering Graphics		
Select one of the following:					
MATH 161	Elementary Statistics*	3	STAT 225	Introduction to Statistics	3
MATH 201	Statistics*	3	STAT 325 & STAT 330 & STAT 350	Introduction to Statistics and Elem Statistics Soc Sci and Business/Econ Statistics I	3

MATH 285	Statistics for Business*	4	MATH 250 & STAT 250	Elements of Statistics and Business/Econ Statistics I	3

Select one of the following options: Agribusiness Management Option, Biomanufacturing Technology Option, Precision Agriculture Option, Production Agriculture Option or Water Management Option

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
Agribusiness Management Option					
ACCT 121	Accounting I (Business Electives**)	3	ACCTG 241	Intro to Financial Accounting	3
ACCT 122	Accounting II*	3	ACCTG 241	Intro to Financial Accounting	3
BLAW 261	Business Law I*	3	MANGT 230	Business Law I	3
HMGT 170	Value-Added Production (Technical Electives***)	3	FDSCI 305 Fundamentals of Food Processing		
MKT 230	Marketing	3	MKTG 250 & MKTG 400	Introduction to Marketing and Introduction to Marketing	3

* JCCC course has a prerequisite or corequisite
** 6 hours total for Business Electives
*** Total hours for Technical Electives is dependent on selected Option; Check with K-State Biological & Agricultural Engineering department

Biological Systems Engineering (B.S.) 126 hours required for the K-State B.S. degree

The curriculum for this major assumes students enter college prepared to take Calculus.

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
K-State Core					
English (two courses) Visit the KSU Core General Education guide for JCCC equivalents.					
Communications Visit the KSU Core General Education guide for JCCC equivalents.					
Math and Statistics					
MATH 241	Calculus I*	5	MATH 220	Analytic Geometry Calc I	4
Natural and Physical Sciences					
PHYS 220	Engineering Physics I*	5	PHYS 213	Engineering Physics I	5
Social and Behavioral Sciences (Select two courses in two subject areas) Visit the KSU Core General Education guide for JCCC equivalents.					
Arts and Humanities (Select two courses in two subject areas) Visit the KSU Core General Education guide for JCCC equivalents.					
Free Electives (Any 100 or 200 level courses may apply) Visit the KSU Core General Education guide for JCCC equivalents.					

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BIOL 135	Principles of Cell and Molecular Biology	4	BIOL 198	Principles of Biology	4
CHEM 124 & CHEM 125	General Chemistry I Lecture* and General Chemistry I Lab*	4	CHM 210 & CHM 220	Chemistry I and Honors Chemistry I	5
CHEM 131 & CHEM 132	General Chemistry II Lecture* and General Chemistry II Lab*	4	CHM 230	Chemistry II	4
ENGR 121	Engineering Orientation	2	DEN 160 Engineering Orientation AND DEN 161 Engineering Problem Solving		
MATH 242	Calculus II*	5	MATH 221	Analytic Geometry Calc II	4
MATH 243	Calculus III*	5	MATH 222	Analytic Geometry Calc III	4
MATH 254	Differential Equations*	4	MATH 340	Elementary Differential Equatn	4
PHYS 221	Engineering Physics II*	5	PHYS 214	Engineering Physics II	5

Biological Option, Environmental Option and Machine Systems Option Requirements

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	Title	Hours			
BIOL 230 & BIOL 231	Microbiology* and Microbiology Lab*	3	BIOL 255 & BIOL 455	General Microbiology and General Microbiology	4
(Requirement for Biological Option, Check with KSU advisor to see if BIOL 230/231 could count as Engineering Elective for Environmental and Machine Systems Options)					
CHEM 140	Principles of Organic Biological Chemistry*	5	CHM 350 & CHM 351	General Organic Chemistry and Gen Organic Chemistry Lab	2
(Requirement for Biological Option and Environmental Option)					
ENGR 251	Statics*	3	CE 333	Statics	3
(Requirement for Machine Systems Option, could count as Engineering Elective for Biological or Environmental Options)					
ENGR 131	Engineering Graphics I:AutoCAD*	4	ME 212	Basic Engr Thermody	3
(Requirement for Machine Systems Option, could count as Engineering Elective for Biological or Environmental Options)					
ENGR 254	Dynamics*	3	ME 512	Dynamics	3
(Requirement for Machine Systems Option, could count as Engineering Elective for Biological or Environmental Options)					
ENGR 284	Thermodynamics*	4	ME 513 Thermodynamics I		

(Requirement for Biological Option; Environmental Option; and Machine Systems Option)					

* JCCC course has a prerequisite or corequisite.

Environmental Engineering (ENVE) (B.S.) **(**https://catalog.k-state.edu/preview_program.php?catoid=62&poid=23498&returnto=12505**) 126 hours required for the K-State B.S. degree**

The curriculum for this major assumes students enter college prepared to take Calculus.

Course Code	Course Title	Course Hours	Transfer Code	Transfer Title	Transfer Hours
Code	**Title**	**Hours**			
K-State Core					
English (two courses) Visit the KSU Core General Education guide for JCCC equivalents.					
Communications Visit the KSU Core General Education guide for JCCC equivalents.					
Math and Statistics					
MATH 241	Calculus I*	5	MATH 220	Analytic Geometry Calc I	4
Natural and Physical Sciences					
PHYS 220	Engineering Physics I*	5	PHYS 213	Engineering Physics I	5
Social and Behavioral Sciences (Select two courses in two subject areas) Visit the KSU Core General Education guide for JCCC equivalents.					
Arts and Humanities (Select two courses in two subject areas) Visit the KSU Core General Education guide for JCCC equivalents.					
Free Electives (Any 100 or 200 level courses may apply) Visit the KSU Core General Education guide for JCCC equivalents.					

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Code	**Title**	**Hours**			
BIOL 135	Principles of Cell and Molecular Biology	4	BIOL 198	Principles of Biology	4
CHEM 124 & CHEM 125	General Chemistry I Lecture* and General Chemistry I Lab*	4	CHM 210 & CHM 220	Chemistry I and Honors Chemistry I	5
CHEM 131 & CHEM 132	General Chemistry II Lecture* and General Chemistry II Lab*	4	CHM 230	Chemistry II	4
CHEM 140	Principles of Organic Biological Chemistry*	5	CHM 350 & CHM 351	General Organic Chemistry and Gen Organic Chemistry Lab	2
ENGR 121	Engineering Orientation	2	DEN 160 Engineering Orientation AND DEN 161 Engineering Problem Solving		
MATH 242	Calculus II*	5	MATH 221	Analytic Geometry Calc II	4
MATH 243	Calculus III*	5	MATH 222	Analytic Geometry Calc III	4

MATH 254	Differential Equations*	4	MATH 340	Elementary Differential Equatn	4
PHYS 221	Engineering Physics II*	5	PHYS 214	Engineering Physics II	5

* JCCC course has a prerequisite or corequisite.

Last Approved Thu Nov 6 18:11:09 2025