

BACHELOR OF SCIENCE

Dual-Degree Mathematics

www.emporia.edu/physics

Dual-Degree Engineering

Offered in Conjunction with the University of Kansas & Kansas State
(Civil, Electrical, and Mechanical Engineering)

The dual-degree program in engineering allows the student to complete all of the requirements for the degree of bachelor of science in mathematics, including all major requirements as well as those in general education, in three years and a summer of residence at Emporia State University. All that remains after the third year is to meet the requirement of at least 124 semester hours to graduate. The dual-degree program permits the student to transfer back to Emporia State as many hours of engineering courses as are necessary to fulfill the 124-hour requirement, and suspends the residency rule that requires a student to be currently enrolled at the time of graduation. A student can normally expect to graduate from ESU after his or her fourth year in college (and the first at the engineering school), and to receive the BS in engineering from either KSU or KU after the fifth year.

General Education

Students in the dual-degree engineering program must meet the LAS general education requirements with the following exceptions: SP101 must be taken rather than SP100; BC103 must be taken rather than EC101; and a Life Science (4 hrs) and Applied Science (3 hrs) courses are not required. MA161 (Calculus I) should be substituted for the basic skills mathematics requirement, and CH123/124 (Chemistry I/Lab) for the physical science requirement.

Recommended Schedule of Classes

First Year – Fall: 17 hours

Courses	Hours
MA161 Calculus I.....	5
EG101 English Composition I.....	3
CS260 Programming...(C++).....	3
SP101 Public Speaking.....	3
PE100 Lifetime Fitness.....	1
PS100 Intro to Engineering.....	2

First Year – Spring: 17 hours

Courses	Hours
MA240 Discrete Math.....	3
MA262 Calculus II.....	5
PH190 Physics I.....	3
PH191 Physics I Lab.....	1
PH192 Physics I Recitation.....	1
EG102 English Composition II.....	3
PE Activity Course.....	1

See summer courses, next page

Second Year- Fall: 16 hours

PH193 Physics II.....	3
PH194 Physics II Lab.....	1
PH195 Physics II Recitation.....	1
PH315 Statics.....	3
MA263 Calculus III.....	3
MA322 Linear Algebra.....	3
Fine Arts Elective.....	2

Second Year – Spring: 18 hours

MA335 Differential Equations I.....	3
MA425 Abstract Algebra.....	3
CS501 Advanced Computer Programming.....	3
BC103 Principles of Economics I.....	3
PH316 Dynamics.....	3
Social/Behavioral Science Elective.....	3

SUMMER

CH123 Chemistry I*	3
CH124 Chemistry I Lab*	2
CH126 Chemistry II*	3
CH127 Chemistry II Lab*	2

*Chemistry is offered only in alternate, odd-numbered summers, so this session may be shifted to the summer between the first and second year. Not all engineering programs at KU require Chemistry II. Please refer to the table below.

Third Year – Fall: 17 hours

Courses	Hours
MA735 Advanced Calculus I.....	3
Mathematics Elective	3
Technical Elective.....	3
Literature/Ideas Elective	3
Cultural Diversity Elective	3
Fine Arts Elective	2

Third Year – Spring: 18 hours

Courses	Hours
MA380 Probability & Statistics	3
Mathematics Electives	6
Technical Elective	3
Social/Behavioral Science Elective	3
History (Multcult Inten) Elective.....	3

TECHNICAL ELECTIVES

Technical electives are courses offered at Emporia State University which will meet certain engineering requirements at either the University of Kansas or Kansas State University. Please refer to the table below.

KEY:

Engineering Field Codes: EECE=Electrical/Computer Engineering, IM=Industrial/Manufacturing Systems Engineering, ME=Mechanical Engineering

Elec=Elective Courses, Req=Required Courses

	KSU			KU	
	EECE	IM	ME	EECE	ME
PS100 Intro to Engineering	Elec	Elec	Elec	---	---
PS200 Intro to Engineering Graphics	Elec	Req	Req	---	Req
PH315 Statics.....	Elec	Req	Req	Elec	Req
PH316 Dynamics	Req	Req	Req	Elec	---
PH410/411 Elect Circuit Analysis & Lab....	Req	Req	Req	---	Req
PH530 Heat & Thermodynamics.....	---	---	---	---	---
PH540 Modern Physics	Elec	---	Elec	Req	Elec
CH126/127 Chemistry II & Lab	Req	Req	Req	---	Req

SUGGESTIONS ABOUT GENERAL EDUCATION

Kansas State University Requirements:

KSU requires that all engineering students complete English Composition I, English Composition II (unless an “A” or “B” is earned in English Composition I), public speaking, one course in physical education, and technical writing (at the junior level).

In addition to the required courses, each KSU student is to complete 15 hours in the humanities and social sciences, which includes such areas as anthropology, art, economics, English, geography, history, journalism, modern language (advanced work only), music, philosophy, political science, psychology, sociology and speech. At least 2 courses must be taken at the 300-level or above, and not more than three credits may be taken in applied music or applied art.

The University of Kansas Requirements:

Students will be required to complete 15-18 semester hours in the areas of humanities and social sciences, depending upon the field of engineering. In selecting courses, students should follow these guidelines: 1) at least one course designated as a humanities course, and one designated as a social science course; 2) at least two courses offered by one department; 3) a maximum of 4 credits from such areas as band, chorus, orchestra, drawing, painting, and sculpture may be taken for general education credit.

