

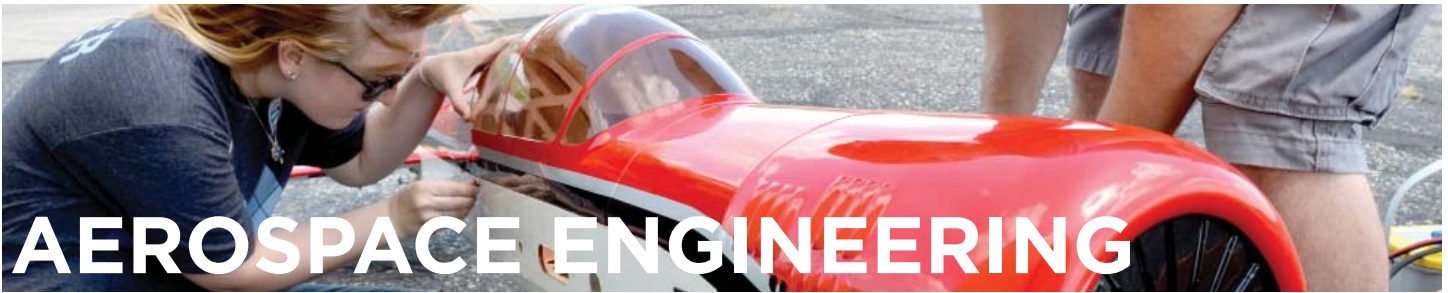
# 2018-2019 Engineering Curriculum Guide



# ENGINEERING SUCCESS

FOR MORE INFO VISIT ENGR.KU.EDU





**KU Aerospace Engineering is one of the top programs in the world in aircraft and engine design education. Four NASA astronauts earned degrees at KU, including a member of the 2017 astronaut class. With an emphasis on designing, simulating, building, testing, and flying aerospace vehicles and systems, KU aerospace engineering students receive access to unmatched educational opportunities. See more: [ae.engr.ku.edu](http://ae.engr.ku.edu).**

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first year – fall	hours
AE 245 Introduction to Aerospace Engineering .....	3
AE 290 Aerospace Colloquium.....	.25
CHEM 150*** Chemistry for Engineers.....	5
KU Core Elective* <sup>H</sup> .....	3
MATH 125 <sup>H</sup> Calculus I.....	4
TOTAL HOURS .....	15.25

first year – spring	hours
AE 290 Aerospace Colloquium.....	.25
MATH 126 <sup>H</sup> Calculus II.....	4
PHSX 210 <sup>H</sup> General Physics I for Engineers.....	3.0
PHSX 216 General Physics I Laboratory .....	1
KU Core Electives* <sup>H</sup> .....	6
AE 211 Computing for Engineers.....	3
TOTAL HOURS .....	17.25

second year – fall	hours
AE 290 Aerospace Colloquium.....	.25
AE 345 Fluid Mechanics .....	3
CE 301 Statics & Dynamics .....	5
KU Core Elective* <sup>H</sup> .....	3
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
PHSX 212 <sup>H</sup> General Physics II.....	3
PHSX 236 .....	General Physics II Laboratory
TOTAL HOURS .....	18.25

second year – spring	hours
AE 290 Aerospace Colloquium.....	.25
MATH 127 <sup>H</sup> Calculus III .....	4
AE 360 Introduction to Astronautics.....	3
AE 445 Aircraft Aerodynamics.....	3
CE 310 Strength of Materials.....	4
ME 312 Basic Engineering Thermodynamics, .....	3
TOTAL HOURS.....	17.25

third year – fall	hours
AE 290 Aerospace Colloquium.....	.25
AE 507 Aerospace Structures I.....	3
AE 545 <sup>H</sup> Fundamentals of Aerodynamics.....	4
AE 550 Dynamics of Flight I.....	4
AE 571 Reciprocating Propulsion .....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra .....	2
TOTAL HOURS .....	16.25

third year – spring	hours
AE 290 Aerospace Colloquium.....	.25
AE 421 Computer Graphics.....	3
AE 508 <sup>H</sup> Aerospace Structures II .....	3
AE 551 <sup>H</sup> Dynamics of Flight II.....	4
AE 572 <sup>H</sup> Fundamentals of Jet Propulsion .....	3
EECS 316 Circuits, Electronics & Instrumentation.....	3
EECS 318 Circuits & Electronics Laboratory .....	1
TOTAL HOURS .....	17.25

fourth year – fall	hours
AE 290 Aerospace Colloquium.....	.25
AE 510 Aerospace Material & Processes .....	4
AE 521 Aerospace Systems Design I .....	4
AE 590 Aerospace Seminar.....	1
Technical elective** or AE 560**** .....	3
KU Core Elective* <sup>H</sup> .....	3
TOTAL HOURS .....	15.25

fourth year – spring	hours
AE 290 Aerospace Colloquium.....	.25
AE 430 Aerospace Instrumentation.....	3
AE 522 Aircraft Systems Design, or ...	
AE 523 Spacecraft Systems Design, or ...	
AE 524 Propulsion Systems Design .....	4
Technical electives** .....	6
KU Core Elective* <sup>H</sup> .....	3
TOTAL HOURS .....	16.25

### CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Technical electives are selected from upper level aerospace courses, approved courses from other engineering departments or approved math courses.

\*\*\*CHEM 130<sup>H</sup> can be substituted for CHEM 150.

\*\*\*\* AE 560 is offered to students who will be taking AE 523 as their capstone requirement.

<sup>H</sup> Honors equivalent course is available.

### CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210 or PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: CHEM 150  
 GE 3S SOCIAL SCIENCES: ECON 104<sup>H</sup>, 142<sup>H</sup> OR 144<sup>H</sup>

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: AE 245, 290 (2 credits), 510, 521, 590

AE 6 CAPSTONE: AE 521, 522, 523, 524, 721, or 722



# ARCHITECTURAL ENGINEERING

Roads, bridges, buildings, water resources, air quality, and more – these all play an increasingly important role in our lives. Civil, environmental and architectural engineering boasts a vibrant faculty, who are preparing engineers to assume leadership roles in the profession. KU’s instructional and laboratory facilities in areas such as environmental engineering, concrete materials, asphalt, and illumination are world-class. See more: [ceae.ku.edu](http://ceae.ku.edu).

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first year – fall	hours
ARCE 101 Intro. to Architectural Engineering .....	2
ARCH 108 Architectural Foundations .....	6
ENGL 101 Composition.....	3
MATH 125 <sup>H</sup> Calculus I.....	4
KU Core GE 2.2** <sup>H</sup> .....	3
<b>TOTAL HOURS .....</b>	<b>18</b>

first year – spring	hours
ARCE 217 Computer Assisted Building Design .....	3
ARCH 281 Design Workshop II: Design Thinking .....	3
ENGL 102 <sup>H</sup> Critical Reading & Writing .....	3
MATH 126 <sup>H</sup> Calculus II .....	4
PHSX 210 <sup>H</sup> General Physics I.....	3
PHSX 216 General Physics I.....	1
<b>TOTAL HOURS .....</b>	<b>17</b>

second year – fall	hours
CE 301 Statics and Dynamics .....	5
CHEM 130 <sup>H</sup> General Chemistry I .....	5
MATH 127 <sup>H</sup> Calculus III .....	4
PHSX 212 <sup>H</sup> General Physics II .....	3
PHSX 236 General Physics II lab .....	1
<b>TOTAL HOURS .....</b>	<b>18</b>

second year – spring	hours
ARCE 350 Building Materials Science .....	3
ME 312 Basic Engineering Thermodynamics .....	3
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
CE 310 Strength of Materials .....	4
MATH 290 <sup>H</sup> Elementary Linear Algebra .....	2
KU Core GE 3S** <sup>H</sup> .....	3
<b>TOTAL HOURS .....</b>	<b>18</b>

third year – fall	hours
CE 461 Structural Analysis .....	4
ARCE 660 Building Thermal Science .....	3
CE 330/ME 510 Fluid Mechanics .....	3
CMGT 457 Construction Project Mgmt .....	3
ARCH 540 Global Hist of Architecture I .....	3
<b>TOTAL HOURS .....</b>	<b>16</b>

third year – spring	hours
ARCE 650 Illumination Engineering I .....	3
ARCE 661 HVAC&R Systems Design .....	3
ARCE 315 Electric Circuits & Machines .....	3
ARCH 541 Global History of Architecture II .....	3
CMGT 500 Construction Engineering .....	3
<b>TOTAL HOURS .....</b>	<b>15</b>

fourth year – fall	hours
ARCE 640 Power Systems Engineering I .....	3
Elective Engineering Science or Engineering Design .....	3
CE 563 Design of Reinforced Concrete Structures .....	3
KU Core AE 4.1** <sup>H</sup> .....	3
MATH 526 Applied Mathematical Statistics .....	3
Fundamentals of Engineering (FE) Exam .....	0
<b>TOTAL HOURS .....</b>	<b>14</b>

fourth year – spring	hours
ARCE 698 ARCE Comprehensive Design Project .....	3
ARCH 509 Architectural Design IV .....	6
CE 562 Design of Steel Structures .....	3
KU Core AE 5* <sup>H</sup> .....	3
<b>TOTAL HOURS .....</b>	<b>15</b>

**Students are required to take the Fundamentals of Engineering (FE) Exam prior to graduation.**

## CURRICULUM NOTES

\* Refer to the Bachelor of Science in Architectural Engineering elective list, available at [www.ceae.ku.edu/undergraduate/curriculum.html](http://www.ceae.ku.edu/undergraduate/curriculum.html).

\*\* Students must ensure the electives they choose fulfill all remaining KU Core requirements. Refer to the lists of acceptable General Education and Advanced Education KU Core courses via [kucore.ku.edu](http://kucore.ku.edu). Students must complete 128 hours to earn the degree. After meeting all curricular requirements students may fill remaining credit hour requirements with general electives.

\*\*\*CHEM 150<sup>H</sup> can be substituted for CHEM 130.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210 or PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: SIX HOURS OF ENGLISH COURSES  
 GE 2.2 ORAL COMMUNICATION: COMS 130-132

GE 3H ARTS & HUMANITIES: ARCH 540  
 GE 3N NATURAL SCIENCES: CHEM 150  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ARCH 541

AE 5 ETHICS & SOCIAL RESPONSIBILITY: ELECTIVE

AE 6 CAPSTONE: CE 562 OR 576



# CHEMICAL ENGINEERING

Creating safer, more environmentally friendly plastics. Enhancing oil recovery techniques. Improving methods for drug delivery. Whatever your passion, a diverse array of options are available to students pursuing a degree in this field, including wide-ranging opportunities in the bioengineering and biomedical fields. KU is the only institution in Kansas that offers a degree in petroleum engineering. See more: [cpe.engr.ku.edu](http://cpe.engr.ku.edu).

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first year – fall	hours
C&PE 111 Introduction to the Profession .....	2
CHEM 170 Chemistry for the Chemical Sciences I .....	5
ENGL 101 Composition .....	3
MATH 125 <sup>H</sup> Calculus I .....	4
KU Core Elective <sup>H</sup> .....	3
TOTAL HOURS .....	17

first year – spring	hours
PHSX 210 <sup>H</sup> General Physics I for Engineers .....	3
PHSX 216 General Physics I Laboratory .....	1
CHEM 175 <sup>H</sup> Chemistry for the Chemical Sciences II .....	5
ENGL 102 <sup>H</sup> Composition & Literature .....	3
MATH 126 <sup>H</sup> Calculus II .....	4
TOTAL HOURS .....	16

second year – fall	hours
C&PE 211 Material & Energy Balances .....	4
CHEM 330 <sup>H</sup> Organic Chemistry I .....	3
CHEM 331 Organic Chemistry I Lab .....	2
PHSX 212 <sup>H</sup> General Physics II .....	3
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra .....	2
TOTAL HOURS .....	17

second – spring	hours
C&PE 221 Chemical Engineering Thermodynamics I .....	3
MATH 127 <sup>H</sup> Calculus III .....	4
Advanced Science Elective .....	3
Engineering Elective*** .....	3
C&PE 325 Numerical Methods and Statistics .....	3
PHSX 236 General Physics II Laboratory .....	1
TOTAL HOURS .....	17

third year – fall	hours
C&PE 511 Momentum Transfer .....	3
C&PE 512 Chemical Engineering Thermodynamics II .....	3
CHEM 525 Physical Chemistry for Engineers .....	4
KU Core Elective** <sup>H</sup> .....	3
Engineering Elective*** .....	3
TOTAL HOURS .....	16

third year – spring	hours
C&PE 525 Heat and Mass Transfer .....	4
C&PE 524 Chemical Engineering Kinetics & Reactor Design .....	3
Advanced Science Elective .....	3
C&PE 522 Economic Appraisal of C&PE Projects .....	2
KU Core Elective** <sup>H</sup> .....	3
TOTAL HOURS .....	15

fourth year – fall	hours
C&PE 611 Design of Unit Operations .....	3
C&PE 615 Introduction to Process Dynamics and Control .....	3
C&PE 616 Chemical Engineering Laboratory I .....	4
Engineering Elective*** .....	3
KU Core Elective** <sup>H</sup> .....	3
TOTAL HOURS .....	16

fourth year – spring	hours
C&PE 613 Chemical Engineering Design .....	4
C&PE 624 Process Safety and Sustainability .....	3
C&PE 626 Chemical Engineering Laboratory II .....	3
Engineering Elective*** .....	3
TOTAL HOURS .....	13

## Optional Concentrations

Students may take the courses outlined above with the following substitutions:

### Biomedical

BIOL 150 Principles of Molecular and Cellular Biology  
 C&PE 656 Intro to Biomedical Engineering  
 Choose one of the following:  
 Biol 600 Intro to Biochemistry  
 Biol 656 Mammalian Physiology

### Environmental

Engineering electives — CE 477, Introduction to Environmental Engineering and three upper level Civil Engineering courses as specified in the Chemical Engineering Handbook

### Materials Science

Engineering electives — Choose 4 engineering courses, plus one advanced science, from a list provided in the Chemical Engineering Handbook.

## Premedical

BIOL 150 Molecular/Cellular Biology  
 BIOL 152 Organismal Biology  
 CHEM 335 Organic Chemistry II  
 BIOL 600 Introduction to Biochemistry

Courses that may be required for admission to medical school or covered on MCAT but not required for graduation with the premedical option:  
 PSYC 104 Psychology  
 SOC 104 Sociology  
 BIOL 656/647 Mammalian Physiology and Lab  
 BIOL 350 Principles of Genetics  
 BIOL 416 Cell Structure and Function

## Petroleum

GEOL 101 Introduction to Geology  
 GEOL 103 Introduction to Geology Lab  
 C&PE 327 Reservoir Engineering I  
 C&PE 527 Reservoir Engineering II  
 C&PE XXX Petroleum Engineering Elective

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210 or PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ENGL 101 & ENGL 102

GE 2.2 ORAL COMMUNICATION: C&PE 613, 616 & 626

GE 3H ARTS & HUMANITIES: ELECTIVE

GE 3N NATURAL SCIENCES: CHEM 170

GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: ELECTIVE

AE 6 CAPSTONE: C&PE 613

### CURRICULUM NOTES

\*\* Students must ensure these electives collectively meet all remaining KU Core requirements for Breadth of Knowledge and Culture and Diversity.

\*\*\* Refer to the Chemical Engineering Handbook, available at <http://www.cpe.engr.ku.edu/students/handbook.pdf>.

<sup>H</sup> Honors equivalent course is available.



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**first year – fall**

	<b>hours</b>
CE 191 Introduction to Civil Engineering Profession* ....	2
CHEM 150 Chemistry for Engineers.....	5
ENGL 101 Composition.....	3
MATH 125 <sup>H</sup> Calculus I.....	4
Basic Science Elective*** .....	3
<b>TOTAL HOURS</b> .....	<b>17</b>

**first year – spring**

CE 192 Civil Engineering Graphics.....	3
ENGL 102 <sup>H</sup> Critical Reading & Writing .....	3
MATH 126 <sup>H</sup> Calculus II.....	4
PHSX 210 <sup>H</sup> General Physics I.....	3
PHSX 216 General Physics 1 Laboratory .....	1
KU Core GE 2.2 ** <sup>H</sup> .....	3
<b>TOTAL HOURS</b> .....	<b>17</b>

**second year – fall**

CE 301 Statics & Dynamics .....	5
MATH 127 <sup>H</sup> Calculus III .....	4
PHSX 212 <sup>H</sup> General Physics II.....	3
PHSX 236 General Physics 1I Laboratory .....	1
KU Core GE 3H ** <sup>H</sup> .....	3
<b>TOTAL HOURS</b> .....	<b>16</b>

**second year – spring**

CE 240 Surveying.....	3
CE 310 Strength of Materials.....	4
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
EECS 137 Visual Basic for Engineers.....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra.....	2
<b>TOTAL HOURS</b> .....	<b>15</b>

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**third year – fall**

	<b>hours</b>
CE 330/331 Fluid Mechanics .....	4
CE 461 Structural Analysis .....	4
CE 412 Structural Engineering Materials, or	
CE 477 Intro to Environmental Engr .....	3
MATH 526 Applied Mathematical Statistics.....	3
Engineering Science Elective**** .....	3
<b>TOTAL HOURS</b> .....	<b>17</b>

**third year – spring**

CE 455 Hydrology.....	3
CE 477 Introduction to Environmental Engineering, or	
CE 484 Materials for Trans. Facilities .....	3
CE 480 Transportation Engineering.....	3
CE 487 Soil Mechanics.....	4
ECON 104 <sup>H</sup> Introductory Economics .....	4
<b>TOTAL HOURS</b> .....	<b>17</b>

**fourth year – fall**

CE 562 Structural Design Elective, or	
CE 563 Design of Reinforced Steel Structures .....	3
CMGT 457 Construction Project Management .....	3
Civil Engineering Design Elective***** .....	4
Civil Engineering Design Elective***** .....	3
KU Core AE 4.1 ** <sup>H</sup> .....	3
Fundamentals of Engineering (FE) Exam .....	0
<b>TOTAL HOURS</b> .....	<b>16</b>

**fourth year – spring**

CE 562 Structural Design Elective, or	
CE 563 Design of Reinforced Steel Structures .....	3
Civil Engineering Design Elective***** .....	3
KU Core AE 4.2 ** <sup>H</sup> .....	3
KU Core AE 5 ** <sup>H</sup> .....	3
General Electives <sup>H</sup> .....	5
<b>TOTAL HOURS</b> .....	<b>17</b>

**Combined Civil Engineering and Business**

A student may pursue a civil engineering degree and a business degree in a five-year, dual-degree program. Careful planning is important. Please consult an advisor.

**CURRICULUM NOTES**

\* Recommended but not required.

\*\* Students must ensure the electives they choose fulfill all remaining KU Core requirements. Refer to the KU Core list of approved courses, [kucore.ku.edu/courses](http://kucore.ku.edu/courses).

\*\*\* GEOL 101, 105, 351, 551; Physics elective; Chemistry elective.

\*\*\*\* Students must take one of the following engineering science courses: EECS 315, Circuits; ME 312, Thermodynamics; ME 306, Science of Materials; or ARCE 350, Building Materials Science.

\*\*\*\*\* One of these electives must be either CE 552 or CE 576

† Students must complete 132 hours to earn the degree. After meeting all curricular requirements students may fill remaining credit hour requirements with general electives.

<sup>H</sup> Honors equivalent course is available.

**CORE DISTRIBUTION**

**GE 1.1 CRITICAL THINKING:** PHSX 210 or PHSX 211  
**GE 1.2 QUANTITATIVE LITERACY:** MATH 125

**GE 2.1 WRITTEN COMMUNICATION:** SIX HOURS OF ENGLISH COURSES  
**GE 2.2 ORAL COMMUNICATION:** ELECTIVE

**GE 3H ARTS & HUMANITIES:** ELECTIVE  
**GE 3N NATURAL SCIENCES:** CHEM 150  
**GE 3S SOCIAL SCIENCES:** ECON 104

**AE 4.1 DIVERSITY IN UNITED STATES:** ELECTIVE  
**AE 4.2 GLOBAL AWARENESS:** ELECTIVE

**AE 5 ETHICS & SOCIAL RESPONSIBILITY:** ELECTIVE

**AE 6 CAPSTONE:** CE 562 OR 576



# CIVIL ENGINEERING

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## first year – fall

	hours
CE 191 Introduction to Civil Engineering Profession* ....	2
CHEM 150 Chemistry for Engineers.....	5
ENGL 101 Composition.....	3
MATH 125 <sup>H</sup> Calculus I.....	4
Basic Science Elective*** <sup>H</sup> .....	3
<b>TOTAL HOURS.....</b>	<b>17</b>

## first year – spring

CE 192 Civil Engineering Graphics.....	3
ENGL 102 <sup>H</sup> Critical Reading & Writing .....	3
MATH 126 <sup>H</sup> Calculus II.....	4
PHSX 210 <sup>H</sup> General Physics I.....	3
PHSX 216 General Physics 1 Laboratory .....	1
KU Core GE 2.2 ** <sup>H</sup> .....	3
<b>TOTAL HOURS .....</b>	<b>17</b>

## second year – fall

CE 301 Statics & Dynamics .....	5
MATH 127 <sup>H</sup> Calculus III .....	4
PHSX 212 <sup>H</sup> General Physics II.....	3
PHSX 236 General Physics 1I Laboratory .....	1
.....KU Core GE 3H ** <sup>H</sup> .....	3
<b>TOTAL HOURS .....</b>	<b>16</b>

## second year – spring

CE 240 Surveying.....	3
CE 310 Strength of Materials.....	4
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra.....	2
EECS 137 Visual Basic for Engineers.....	3
<b>TOTAL HOURS.....</b>	<b>15</b>

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## third year – fall

CE 330/331 Fluid Mechanics .....	4
CE 461 Structural Analysis .....	4
CE 412 Structural Engineering Materials, or .....	
CE 477 Introduction to Environmental Engineering .....	3
MATH 526 Applied Mathematical Statistics.....	3
ENGR ELECT Engineering Science Elective.....	3
<b>TOTAL HOURS .....</b>	<b>17</b>

## third year – spring

	hours
CE 455 Hydrology.....	3
CE 484 Materials for Transportation Facilities, or .....	
CE 477 Introduction to Environmental Engineering .....	3
CE 487 Soil Mechanics.....	4
KU Core AE 4.1 ** <sup>H</sup> .....	3
ECON 104 <sup>H</sup> Introductory Economics, .....	4
<b>TOTAL HOURS.....</b>	<b>17</b>

## fourth year – fall

CE 562 or 563 Structural Design Elective, or .....	
Environmental Design elective.....	3
CE 552 Water Resources Engineering Design .....	4
CE 570/571 Environmental Principles Elective, or .....	
CE 573 Biol. Principles of Environmental Engr.....	3
CMGT 457 Construction Project Management .....	3
KU Core AE 5 ** <sup>H</sup> .....	3
<b>TOTAL HOURS .....</b>	<b>16</b>

## fourth year – spring

Environmental Design Elective, or ...	
CE 562 or 563 Structural Design Elective.....	3
CE 576 Muni. Waste Sply. and Wastewater Trtmnt. ....	4
CE 500/582/588 Civil Engineering Design Elective .....	3
KU Core AE 4.2 ** <sup>H</sup> .....	3
General Elective <sup>H</sup> .....	4 <sup>†</sup>
Fundamentals of Engineering (FE) Exam .....	0
<b>TOTAL HOURS .....</b>	<b>17</b>

### CURRICULUM NOTES

\* Recommended but not required.

\*\* Students must ensure the electives they choose fulfill all remaining KU Core requirements. Refer to the KU Core list of approved courses, [kucore.ku.edu/courses](http://kucore.ku.edu/courses).

\*\*\* ATMO 105, 521; BIOL 104, 400, 414, 660; CHEM 622, 646; GEOG 358, 521; GEOL 101, 302, 351, 551.

\*\*\*\* Students must take one of the following engineering science courses: EECS 315, Circuits; ME 312, Thermodynamics; ME 306, Science of Materials; or ARCE 350, Building Materials Science.

† Students must complete 132 hours to earn the degree. After meeting all curricular requirements students may fill remaining credit hour requirements with general electives.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210 or PHSX 211  
GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: SIX HOURS OF ENGLISH COURSES  
GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
GE 3N NATURAL SCIENCES: CHEM 150  
GE 3S SOCIAL SCIENCES: ECON 104, 142H OR 144H

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: ELECTIVE

AE 6 CAPSTONE: CE 562 OR 576

# COMPUTER ENGINEERING

KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eeecs.ku.edu](http://eeecs.ku.edu)

Information appearing in this guide is subject to change. Please talk with your departmental adviser about degree requirements on a regular basis. A recommended 5-year course

first year – fall	hours
EECS 101 New Student Seminar .....	1
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or...	
EECS 168 <sup>H</sup> Programming I .....	4
ENGL 101 Composition (KU Core GE 2.1) .....	3
MATH 125 <sup>H</sup> Calculus I .....	4
ECON 142 <sup>H</sup> Principles of Microeconomics, or	
ECON 144 <sup>H</sup> Principles of Macroeconomics .....	3
TOTAL HOURS .....	15

first year – spring	hours
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or...	
EECS 168 <sup>H</sup> Programming I .....	4
ENGL 102 <sup>H</sup> Critical Reading & Writing (or KU Core GE 2.1) .....	3
MATH 126 <sup>H</sup> Calculus II .....	4
PHSX 210 <sup>H</sup> General Physics I for Engineers .....	3
PHSX 216 General Physics I Laboratory .....	1
TOTAL HOURS .....	15

second year – fall	hours
EECS 211 Circuits I .....	3
EECS 268 Programming II .....	4
MATH 127 <sup>H</sup> Calculus III .....	4
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra .....	2
TOTAL HOURS .....	16

second year – spring	hours
KU Core GE 2.2 * <sup>H</sup> .....	3
EECS 210 Discrete Structures .....	4
EECS 212 Circuits II .....	4
EECS 221 Electromagnetics I .....	3
KU Core GE 3H * <sup>H</sup> .....	3
TOTAL HOURS .....	17

third year – fall	hours
EECS 312 Electronic Circuits I .....	3
EECS 368 Programming Language Paradigms .....	3
EECS 388 Computer Systems & Assembly Language .....	4
EECS 448 Software Engineering I .....	4
Add'l KU Core Arts/Human./SocSci Elective* <sup>H</sup> .....	3
TOTAL HOURS .....	17

third year – spring	hours
EECS 360 Signal & System Analysis .....	4
EECS 443 Digital Systems Design .....	4
MATH 526 Applied Mathematical Statistics .....	3
KU Core AE 4.1* <sup>H</sup> .....	3
Professional Elective** <sup>H</sup> .....	3
TOTAL HOURS .....	17

fourth year – fall	hours
EECS 541 Computer Systems Design Laboratory I .....	3
EECS 563 Introduction to Communication Networks .....	3
EECS 645 Computer Architecture .....	3
EECS Senior Elective #1*** .....	3
PHSX 313 General Physics III .....	3
PHSX 316 General Physics III Lab .....	1
TOTAL HOURS .....	16

fourth year – spring	hours
EECS 542 Computer Systems Design Laboratory II .....	3
EECS 678 Introduction to Operating Systems .....	4
EECS Senior Elective #2*** .....	3
EECS Senior Elective #3*** .....	3
KU Core AE 4.2 * <sup>H</sup> .....	3
TOTAL HOURS .....	16

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements. Additional electives from the KU Core list are required for graduation.

\*\* Professional Electives are chosen from a list of engineering, natural science, math, or business courses identified in the EECS department handbook.

\*\*\* Nine hours of senior electives are chosen from EECS courses at 400 level or above, excluding EECS 498, 692 and 645. See student handbook for details.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210 or PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: PHSX 313  
 GE 3S SOCIAL SCIENCES: ECON 142<sup>H</sup> OR 144<sup>H</sup>

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: EECS 101, 541; AND PHSX 216

AE 6 CAPSTONE: EECS 542



# COMPUTER SCIENCE

KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eeecs.ku.edu](http://eeecs.ku.edu)

Information appearing in this guide is subject to change. Please talk with your departmental adviser about degree requirements on a regular basis. A recommended 5-year course

first year – fall	hours
EECS 101 New Student Seminar .....	1
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup> Programming I .....	4
ENGL 101 Composition (or any KU Core GE 2.1) .....	3
MATH 125 <sup>H</sup> Calculus I .....	4
KU Core GE 3H * <sup>H</sup> .....	3
TOTAL HOURS .....	15

first year – spring	hours
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup> Programming I .....	4
ENGL 102 <sup>H</sup> Critical Reading & Writing (or any KU Core GE 2.1) .....	3
MATH 126 <sup>H</sup> Calculus II .....	4
PHSX 210 <sup>H</sup> General Physics I for Engineers .....	3
PHSX 216 General Physics I Laboratory .....	1
TOTAL HOURS .....	15

second year – fall	hours
EECS 268 Programming II .....	4
MATH 127 <sup>H</sup> Calculus III .....	4
MATH 290 <sup>H</sup> Elementary Linear Algebra .....	2
PHSX 212 <sup>H</sup> General Physics II .....	3
PHSX 236 General Physics II Laboratory .....	1
KU Core GE 3S * <sup>H</sup> .....	3
TOTAL HOURS .....	17

second year – spring	hours
EECS 210 Discrete Structures .....	
...4	
EECS 368 Programming Language Paradigms .....	3
EECS 388 Computer Systems & Assembly Language .....	4
Add'l KU Core Arts & Humanities Elective * <sup>H</sup> .....	3
Science Elective** <sup>H</sup> .....	3

third year – fall	hours
KU Core GE 2.2 * <sup>H</sup> .....	3
EECS 448 Software Engineering I .....	4
EECS 510 Introduction to the Theory of Computing .....	3
EECS 645 Computer Architecture .....	3
Add'l KU Core Social Science Elective * .....	3
TOTAL HOURS .....	16

third year – spring	hours
EECS 560 Data Structures .....	4
EECS 678 Introduction to Operating Systems .....	4
MATH 526 Applied Mathematical Statistics I .....	3
KU Core AE 4.1* <sup>H</sup> .....	3
Professional Elective*** <sup>H</sup> .....	3
TOTAL HOURS .....	17

fourth year – fall	hours
EECS 581 Computer Science Design I .....	3
EECS 662 Programming Languages .....	3
EECS 665 Compiler Construction .....	4
EECS Senior Elective #1**** .....	3
EECS Senior Elective #2**** .....	3
TOTAL HOURS .....	16

fourth year – spring	hours
EECS 582 Computer Science Design II .....	3
EECS 660 Fundamentals of Computer Algorithms .....	3
EECS Senior Elective #3**** .....	3
EECS Senior Elective #4**** .....	3
KU Core AE 4.2 * <sup>H</sup> .....	3
TOTAL HOURS .....	15

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements. Additional electives from the KU Core list are required for graduation.

\*\* Natural Science Electives courses designated to GE3N except Basic Science requirements and any PHSX course under 212

\*\*\* A Professional Elective is chosen from a list of engineering, natural science, math, or business courses identified in the EECS Department Handbook.

\*\*\*\* Senior Electives are EECS 563, EECS 565, EECS 638, EECS 639, EECS 647, EECS 648, EECS 649, EECS 672, EECS 690 and any EECS course 700 level or above.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210 or 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: PHSX 212  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: EECS 101, PHSX 216 AND EECS 581

AE 6 CAPSTONE: EECS 582

# ELECTRICAL ENGINEERING

KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eeecs.ku.edu](http://eeecs.ku.edu)

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first year – fall	hours
EECS 101 New Student Seminar .....	1
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup> Programming I .....	4
ENGL 101 Composition (or any GE2.1) .....	3
MATH 125 <sup>H</sup> Calculus I .....	4
ECON 142 <sup>H</sup> Principles of Microeconomics, or ...	
ECON 144 <sup>H</sup> Principles of Macroeconomics .....	3
TOTAL HOURS .....	15

first year – spring	hours
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup> Programming I .....	4
ENGL 102 <sup>H</sup> Critical Reading & Writing (or any GE 2.1) .....	3
MATH 126 <sup>H</sup> Calculus II .....	4
PHSX 210 <sup>H</sup> General Physics I .....	3
PHSX 216 General Physics I Laboratory .....	1
TOTAL HOURS .....	15

second year – fall	hours
CHEM 130 <sup>H</sup> Chemistry for Engineers (or CHEM 150) .....	5
EECS 211 Circuits I .....	3
MATH 220 Applied Differential Equations .....	3
MATH 127 <sup>H</sup> Calculus III .....	4
MATH 290 <sup>H</sup> Elementary Linear Algebra .....	2
TOTAL HOURS .....	17

second year – spring	hours
EECS 212 Circuits II .....	4
EECS 221 Electromagnetics I .....	3
EECS 388 Computer Systems & Assembly Language .....	4
KU Core Elective * H (GE 3H) .....	3
Add'l KU Core Arts/Human./SocSci Elective * H..	3
TOTAL HOURS .....	17

third year – fall	hours
KU Core Goal 2.2 .....	3
EECS 312 Electronic Circuits I .....	3
EECS 360 Signal & System Analysis .....	4
PHSX 313 General Physics III .....	3
PHSX 316 Intermediate Physics Lab .....	1
KU Core Elective * <sup>H</sup> (AE 4.1) .....	3
TOTAL HOURS .....	17

third year – spring	hours
EECS 412 Electronic Circuits II .....	4
EECS 444 Control Systems .....	3
MATH 526 Applied Mathematical Statistics .....	3
EECS 562 Introduction to Communication Systems .....	4
Professional Elective I** <sup>H</sup> .....	3
TOTAL HOURS .....	17

fourth year – fall	hours
EECS 420 Electromagnetics II .....	4
EECS 470 Electronic Devices & Properties of Materials ...	3
EECS 501 Senior Design Laboratory .....	3
EECS Senior Elective #1*** .....	3
Professional Elective 2** <sup>H</sup> .....	3
TOTAL HOURS .....	16

fourth year – spring	hours
EECS 443 Digital Systems Design .....	4
EECS 502 Senior Design Laboratory II .....	3
EECS Senior Elective #2*** .....	3
EECS Senior Elective #3*** .....	3
KU Core Elective * H (AE 4.2) .....	3
TOTAL HOURS .....	16

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements. Additional electives from the KU Core list are required for graduation.

\*\* Six hours of Professional Electives are chosen from a list of engineering, natural science, math, or business courses identified in the EECS Department handbook.

\*\*\* Nine hours of senior electives are chosen from EECS courses at 400 level or above, excluding EECS 498 and 692. See student handbook for details.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: EECS 101, PHSX 216 AND EECS 501

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: PHSX 313  
 GE 3S SOCIAL SCIENCES: ECON 142 OR 144

AE 6 CAPSTONE: EECS 502

# ENGINEERING PHYSICS

## AEROSPACE SYSTEMS DESIGN CONCENTRATION

Our interdisciplinary program prepares students for life in the 21st century. Students work with faculty in both Engineering and Physics both in the classroom, and in cutting edge research opportunities.

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first year – fall	hours
AE 245 Intro to Aerospace Engineering .....	3
PHSX 150 Seminar in Physics, Astronomy, & Engineering ....	.5
PHSX 150 Physics.....	.5
KU Core <sup>H</sup> KU Core GE 2.1.....	3
MATH 125 <sup>H</sup> Calculus I.....	4
CHEM 130 General Chemistry I, or ...	
CHEM 150 Chemistry for Engineers.....	5
TOTAL HOURS .....	15.5

first year – spring	hours
AE 211 Computing for Engineers, or...	
EECS 138 Intro to Computing .....	3
KU Core <sup>H</sup> KU Core GE 2.1.....	3
MATH 126 <sup>H</sup> Calculus II.....	4
PHSX 211 <sup>H</sup> General Physics I.....	4
PHSX 216 General Physics I Laboratory .....	1
TOTAL HOURS .....	15

second year – fall	hours
AE 245 Fluid Mechanics .....	3
CE 301 Statics and Dynamics.....	5
MATH 127 <sup>H</sup> Calculus III .....	4
PHSX 212 <sup>H</sup> General Physics II.....	3
PHSX 236 General Physics II lab.....	1
MATH 290 <sup>H</sup> Elementary Linear Algebra.....	2
TOTAL HOURS .....	18

second year – spring	hours
AE 445 Aircraft Aerodynamics and Performance.....	3
C&PE 221 Basic Engineering Thermodynamics, or	
ME 312 Basic Engineering Thermodynamics.....	3
CE 310 Strength of Materials .....	4
MATH 220 <sup>H</sup> Differential Equations.....	3
PHSX 313 General Physics III .....	3
PHSX 316 Intermediate Physics III lab.....	1
TOTAL HOURS.....	17

third year – fall	hours
AE 507 Aerospace Structures I.....	3
AE 545 Fundamentals of Aero. Design .....	5
AE 550 Dynamics of Flight I.....	3
EPHX 521 Mechanics I.....	3
KU Core <sup>H</sup> .....	3
TOTAL HOURS .....	17

third year – spring	hours
AE 421 Aerospace Computer Graphics .....	4
AE 551 Dynamics of Flight II.....	5
AE 572 Fundamentals of Jet Propulsion .....	3
AE 508 Aerospace Structures II (a), or	
EPHX 536 Electrical Circuit Meas. and Design (s) .....	3-4
TOTAL HOURS.....	14-15

fourth year – fall	hours
AE 560 Aerospace Material & Processes (s), or	
AE 521 Aerospace Systems Design I (a) .....	3-4
EPHX 531 Electricity & Magnetism.....	3
EPHX 516 Physical Measurements .....	3
KU Core Elective* <sup>H</sup> .....	3
KU Core Elective* <sup>H</sup> .....	3
TOTAL HOURS .....	16-17

fourth year – spring	hours
EPHX 536 Electrical Circuit Meas. and Design (a), or	
AE 523 Space Systems Design (s) .....	4
EPHX 601 Designing Physical and Electronic Systems.....	4
KU Core Elective* <sup>H</sup> .....	3
KU Core Elective* <sup>H</sup> .....	3
TOTAL HOURS.....	14

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: CHEM 150  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: PHSX  
 150, 216, 236, 316, and 516

AE 6 CAPSTONE: PHSX / EPHX 601

### CURRICULUM NOTES

(a) Aircraft track

(s) Spacecraft track

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

<sup>H</sup> Honors equivalent course is available.

# ENGINEERING PHYSICS

## CHEMICAL SYSTEMS CONCENTRATION

Our interdisciplinary program prepares students for life in the 21st century. Students work with faculty in both Engineering and Physics both in the classroom, and in cutting edge research opportunities.

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### first year – fall

	hours
CHEM 170 <sup>H</sup> Chemistry for Chemical Sciences**, or	
CHEM 130 General Chemistry I .....	5
KU Core <sup>H</sup> KU Core Goal GE 2.1 .....	3
MATH 125 <sup>H</sup> Calculus I.....	4
PHSX 150 Seminar in Phys., Astr., & Engineering Physics... ..	5
KU Core Elective* <sup>H</sup> .....	3
TOTAL HOURS .....	15.5

### first year – spring

CHEM 175 <sup>H</sup> Chemistry for Chemical Sciences II*, or	
CHEM 135 General Chemistry II .....	5
KU Core <sup>H</sup> KU Core Goal GE 2.1 .....	3
MATH 126 <sup>H</sup> Calculus II.....	4
PHSX 211 General Physics I, and .....	4
PHSX 216 General Physics I Laboratory .....	1
-or-	
PHSX 213 General Physics I Honors.....	5
TOTAL HOURS .....	17

### second year – fall

C&PE 211 Material & Energy Balances .....	3
CHEM 330 <sup>H</sup> Organic Chemistry I .....	3
MATH 127 <sup>H</sup> Calculus III .....	4
MATH 290 <sup>H</sup> Elementary Linear Algebra.....	2
PHSX 212 <sup>H</sup> General Physics II, and .....	3
PHSX 236 General Physics II Laboratory .....	1
TOTAL HOURS.....	16

### second year – spring

C&PE 325 Numerical Methods.....	3
C&PE 221 Chemical Engineering Thermodynamics I.....	3
MATH 220 <sup>H</sup> Applied Differential Equations, or ...	
MATH 320 Elementary Differential Equations .....	3
PHSX 313 General Physics III .....	3
PHSX 316 Intermediate Physics Lab.....	1
KU Core Electives* <sup>H</sup> .....	3
TOTAL HOURS .....	16

### third year – fall

	hours
CHEM 535 Physical Chemistry for Engineers .....	4
C&PE 511 Momentum Transfer .....	3
C&PE 512 Process Engineering Thermodynamics II .....	3
KU Core Electives* <sup>H</sup> .....	3
EPHX 521 Mechanics I.....	3
TOTAL HOURS .....	16

### third year – spring

C&PE 525 Heat and Mass Transfer.....	4
C&PE 522 Economic Appraisal of C&PE Projects.....	2
C&PE 524 Kinetics & Reactor Design.....	3
EPHX 536 Electronic Circuit Measurement & Design .....	4
KU Core Electives* <sup>H</sup> .....	3
TOTAL HOURS .....	16

### fourth year – fall

C&PE 613 Chemical Engineering Design I.....	4
C&PE 615 Introduction to Process Dynamics & Control.....	3
C&PE 616 Chemical Engineering Lab I.....	3
EPHX 516 Physical Measurements .....	4
EPHX 531 Electricity & Magnetism.....	3
TOTAL HOURS .....	17

### fourth year – spring

C&PE 623 Chemical Engineering Design II .....	2
EPHX 511 Introductory Quantum Mechanics.....	3
EPHX 601 Design of Physical and Electronic Systems.....	4
KU Core Electives* <sup>H</sup> .....	6
TOTAL HOURS .....	15

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: CHEM 170  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: PHSX  
 150, 216, 236, 316, and 516

AE 6 CAPSTONE: PHSX / EPHX 601

### CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\*CHEM 130<sup>H</sup>/135<sup>H</sup> can be substituted for CHEM 170/175.

<sup>H</sup> Honors equivalent course is available.

# ENGINEERING PHYSICS

## DIGITAL ELECTRONIC SYSTEMS CONCENTRATION

Our interdisciplinary program prepares students for life in the 21st century. Students work with faculty in both Engineering and Physics both in the classroom, and in cutting edge research opportunities.

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first year – fall		hours
CHEM 130 <sup>H</sup>	General Chemistry I, or	
CHEM 150	Chemistry for Engineers .....	5
KU Core <sup>H</sup>	KU Core Goal GE 2.1 .....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
PHSX 150	Seminar in Phys., Astr., & Engineering Physics... ..	5
	KU Core Elective* <sup>H</sup> .....	3
	TOTAL HOURS .....	15.5

first year – spring		hours
EECS 168 <sup>H</sup>	Programming I .....	4
KU Core <sup>H</sup>	KU Core Goal GE 2.1 .....	3
MATH 126 <sup>H</sup>	Calculus II.....	4
PHSX 211 <sup>H</sup>	General Physics I, and .....	4
PHSX 216	General Physics I Laboratory .....	1
	TOTAL HOURS.....	16

second year – fall		hours
EECS 211	Circuits I .....	3
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design.....	4
MATH 220 <sup>H</sup>	Applied Differential Equations, or ...	
MATH 320	Elementary Differential Equations .....	3
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
PHSX 212 <sup>H</sup>	General Physics II, and .....	3
PHSX 236	General Physics II Laboratory .....	1
	TOTAL HOURS .....	16

second year – spring		hours
EECS 212	Circuits II .....	4
EECS 268	Programming II .....	4
MATH 127 <sup>H</sup>	Calculus III .....	4
PHSX 313	General Physics III .....	3
PHSX 316	Intermediate Physics Lab .....	1
	KU Core Elective* <sup>H</sup> .....	3
	TOTAL HOURS .....	18

third year – fall		hours
EECS 312	Electronic Circuits I .....	3
EECS 360	Signal & System Analysis .....	4
EECS 388	Computer Systems & Assembly Language.....	4
EPHX 521	Mechanics I .....	3
	KU Core Elective* <sup>H</sup> .....	3
	TOTAL HOURS .....	17

third year – spring		hours
EECS 443	Digital Systems Design .....	4
EECS 448	Software Engineering I .....	4
EECS 461	Probability & Statistics.....	3
EPHX 511	Introductory Quantum Mechanics.....	3
	KU Core Elective* <sup>H</sup> .....	3
	TOTAL HOURS .....	17

fourth year – fall		hours
EECS 470	Electronic Devices & Properties of Materials.....	3
EECS 541	Computer Systems Design Lab I .....	3
	EECS Elective** .....	3
EPHX 516	Physical Measurements .....	4
EPHX 531	Electricity & Magnetism.....	3
	TOTAL HOURS .....	16

fourth year – spring		hours
EECS 542	Computer Systems Design Lab II.....	3
EECS 645	Computer Architecture.....	3
EPHX 601	Design of Physical and Electronic Systems.....	4
	KU Core Elective* <sup>H</sup> .....	6
	TOTAL HOURS .....	16

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 211  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: PHSX  
 150, 216, 236, 316, and 516

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: CHEM 150  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 6 CAPSTONE: PHSX / EPHX 601

### CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\*Allowed courses are EECS 546, EECS 644, EECS 670, EECS 690 or EECS 713.

<sup>H</sup> Honors equivalent course is available.

# ENGINEERING PHYSICS

## ELECTROMECHANICAL CONTROL CONCENTRATION

Our interdisciplinary program prepares students for life in the 21st century. Students work with faculty in both Engineering and Physics both in the classroom, and in cutting edge research opportunities.

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first year – fall	hours
CHEM 130 General Chemistry I, or	
CHEM 150 Chemistry for Engineers***	5
KU Core <sup>H</sup> KU Core Goal GE 2.1	3
MATH 125 <sup>H</sup> Calculus I	54
ME 228 Computer Graphics	3
PHSX 150 Seminar in Phys., Astr., & Engineering Physics	5
TOTAL HOURS	15.5

first year – spring	hours
EECS 168 <sup>H</sup> Programming I	4
KU Core <sup>H</sup> KU Core Goal GE 2.1	3
MATH 126 <sup>H</sup> Calculus II	4
PHSX 211 <sup>H</sup> General Physics I, and	4
PHSX 216 General Physics I Laboratory	1
TOTAL HOURS	16

second year – fall	hours
EECS 211 Circuits I	3
EECS 140 <sup>H</sup> Introduction to Digital Logic Design	4
MATH 220 <sup>H</sup> Applied Differential Equations, or ...	
MATH 320 Elementary Differential Equations	3
MATH 290 <sup>H</sup> Elementary Linear Algebra	2
PHSX 212 <sup>H</sup> General Physics II, and	3
PHSX 236 General Physics II Laboratory	1
TOTAL HOURS	16

second year – spring	hours
EECS 212 Circuits II	4
EECS 268 Programming II	4
MATH 127 <sup>H</sup> Calculus III	4
ME 210 Intro to Mechanics	1
PHSX 313 General Physics III	3
PHSX 316 Intermediate Physics Lab	1
TOTAL HOURS	17

third year – fall	hours
EECS 360 Signal & System Analysis	4
EPHX 521 Mechanics I	3
ME 311 Mechanics of Materials	3
ME 312 Basic Engineering Thermodynamics	3
KU Core Elective* <sup>H</sup>	3
TOTAL HOURS	16

third year – spring	hours
EECS 312 Electronic Circuits I	3
EPHX 511 Introductory Quantum Mechanics	3
ME 501 Mechanical Engineering Design Process	2
ME 628 Mechanical Design I	3
KU Core Elective* <sup>H</sup>	3
TOTAL HOURS	14

fourth year – fall	hours
EPHX 516 Physical Measurements	4
EPHX 531 Electricity & Magnetism	3
Engineering Elective**	3
ME 640 Design Project, or	
ME 627 Automotive Design	2-3
KU Core Elective* <sup>H</sup>	3
TOTAL HOURS	15-16

fourth year – spring	hours
EECS 444 Control Systems, or	
ME 682 Control Systems	3
EPHX 601 Design of Physical and Electronic Systems	4
ME 641/642/643/644/645 Capstone Design Project	2-4
KU Core Elective* <sup>H</sup>	3
KU Core Elective* <sup>H</sup>	3
TOTAL HOURS	15-17

### CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* ME 642 (Design Project B – Formula Car) requires ME 627 to be taken in the previous semester as the engineering elective. ME 643 (Design Project C – Biomechanics) requires ME 633 to be taken in the previous semester as the engineering elective. ME 641 (Design Project A) is also available, but has several prerequisite courses that would need to be taken.

\*\*\*CHEM 130<sup>H</sup> can be substituted for CHEM 150.

<sup>H</sup> Honors equivalent course is available.

### CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 211  
GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
GE 3N NATURAL SCIENCES: CHEM 150  
GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: PHSX 150, 216, 236, 316, and 516

AE 6 CAPSTONE: PHSX / EPHX 601

# INFORMATION TECHNOLOGY

KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

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## first year – fall

	hours
Composition I .....	3
College Algebra .....	3
Programming Fundamentals* .....	4
General Psychology .....	3
Public Speaking .....	3
TOTAL HOURS .....	16

## first year – spring

Composition II .....	3
Chemistry or Biology w/lab.....	4-5
Programming Algorithms*.....	4
Accounting I* .....	3
UNIX Scripting and Utilities*** .....	3
TOTAL HOURS .....	17-18

## second year – fall

Database Management .....	4
Discrete Structures I* .....	3
KU Core Elective ** .....	3
Survey of Economics .....	3
TOTAL HOURS .....	13

## second year – spring

Data Structures* .....	4
Discrete Structures II* .....	3
Physics with Lab .....	5
KU Core Elective **.....	3
TOTAL HOURS .....	15

MATH 365	Statistics .....	3
MGMT 305	Survey of Management .....	3
IT 310	Computer Org. and Platform Technologies .....	3
IT 340	Computer and Information Security .....	3
IT 380	IT Project Management.....	3
TOTAL HOURS .....		15

## third year – spring

ENGL 362	Technical Writing .....	3
IT 320	Systems & Network Administration .....	3
IT 330	Web Systems and Technologies .....	3
IT 342	Information Security Management .....	3
	KU Core Elective ** .....	3
TOTAL HOURS .....		15

## fourth year – fall

IT 410	Software Engineering & Management .....	3
IT 430	Human-Computer Interaction .....	3
IT 422	Computer Networks .....	3
IT	Senior Elective #1 .....	3
IT 490	IT Capstone I .....	3
TOTAL HOURS .....		15

## fourth year – spring

IT 416	System Architecture and Integration .....	3
IT 420	Operating Systems .....	3
IT 450	Social and Professional Issues .....	3
IT	Senior Elective #2 .....	3
IT 492	IT Capstone II .....	3
TOTAL HOURS .....		15

The BS in Information Technology must be completed by taking courses at the KU Edwards Campus in Overland Park. In addition, students planning to attain the degree will need to transfer key credits from other academic institutions as not all required courses are available through KU.

## third year – fall

The following plan presents what a student transferring to KU from a community college after two years would be expected to complete. Most of these courses are also available through KU.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 114  
 GE 1.2 QUANTITATIVE LITERACY: MATH 365

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: IT 450

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: BIOL 150 or CHEM 130  
 GE 3S SOCIAL SCIENCES: PSYC 104

AE 6 CAPSTONE: IT 490

### CURRICULUM NOTES

\* This specific course is not offered at KU, however an equivalent course from KU may be substituted. Consult your adviser.

\*\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\*\* No equivalent course is offered at KU; it must be transferred from a different university.

See the BSIT Handbook: <http://it.eecs.ku.edu/BSIT/>

# INTERDISCIPLINARY COMPUTING

**ASTRONOMY CONCENTRATION** - KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

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first year – fall		hours
EECS 101	New Student Seminar .....	1
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
ENGL 101	Composition.....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

first year – spring		hours
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
ENGL 102 <sup>H</sup>	Critical Reading & Writing .....	3
MATH 126 <sup>H</sup>	Calculus II.....	4
PHSX 210 <sup>H</sup>	General Physics I for Engineers.....	3
PHSX 216	General Physics I Laboratory .....	1
	<b>TOTAL HOURS .....</b>	<b>15</b>

second year – fall		hours
EECS 268	Programming II .....	4
MATH 127 <sup>H</sup>	Calculus III .....	4
MATH 220 <sup>H</sup>	Applied Differential Equations .....	3
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
PHSX 212 <sup>H</sup>	General Physics II.....	3
PHSX 236	General Physics II Laboratory .....	1
	<b>TOTAL HOURS .....</b>	<b>17</b>

second year – spring		hours
ASTR 391	Physical Astronomy, Honors .....	3
EECS 210	Discrete Structures .....	4
EECS 368	Programming Language Paradigms.....	3
EECS 388	Computer Systems & Assembly Language.....	4
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>17</b>

third year – fall		hours
ASTR 591	Stellar Astronomy .....	3
ASTR 596	Observational Astrophysics .....	1
EECS 448	Software Engineering I .....	4
EECS 510	Introduction to the Theory of Computing.....	3
MATH 526	Applied Mathematical Statistics I .....	3
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>17</b>

third year – spring		hours
ASTR 592	Galactic & Extragalactic Astronomy .....	3
EECS 560	Data Structures.....	4
EECS 678	Introduction to Operating Systems .....	4
PHSX 313	General Physics III .....	3
PHSX 316	Intermediate Physics Lab .....	1
	<b>TOTAL HOURS .....</b>	<b>15</b>

fourth – fall		hours
ASTR 503	Undergraduate Research .....	2
ASTR	Astronomy Elective #1 .....	3
	KU Core Elective * <sup>H</sup> .....	3
EECS 581	Computer Science Design I .....	3
EECS	Senior Elective #1**.....	3
	<b>TOTAL HOURS .....</b>	<b>14</b>

fourth year – spring		hours
ASTR	Astronomy Elective #2 .....	3
EECS 582	Computer Science Design II .....	3
EECS	Senior Elective #2**.....	3
EECS	Senior Elective #3**.....	3
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Senior Electives are EECS 563, EECS 565, EECS 638, EECS 639, EECS 647, EECS 648, EECS 649, EECS 672, EECS 690 and any EECS course 700 level or above.

<sup>H</sup> Honors equivalent course is available

Curriculum may vary on even or odd years. Check your handbook for more information.

## CORE DISTRIBUTION

**GE 1.1 CRITICAL THINKING:** PHSX 210 or PHSX 211  
**GE 1.2 QUANTITATIVE LITERACY:** MATH 125

**GE 2.1 WRITTEN COMMUNICATION:** ELECTIVE  
**GE 2.2 ORAL COMMUNICATION:** ELECTIVE

**GE 3H ARTS & HUMANITIES:** ELECTIVE  
**GE 3N NATURAL SCIENCES:** PHSX 212  
**GE 3S SOCIAL SCIENCES:** ELECTIVE

**AE 4.1 DIVERSITY IN UNITED STATES:** ELECTIVE  
**AE 4.2 GLOBAL AWARENESS:** ELECTIVE

**AE 5 ETHICS & SOCIAL RESPONSIBILITY:** EECS 101, PHSX 216 AND EECS 581

**AE 6 CAPSTONE:** EECS 582



# INTERDISCIPLINARY COMPUTING

**BIOLOGY CONCENTRATION** - KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

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first year – fall		hours
CHEM 130 <sup>H</sup>	Foundations of Chemistry 1.....	5
EECS 101	New Student Seminar .....	1
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
ENGL 101	Composition.....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
TOTAL HOURS .....		17

first year – spring		hours
CHEM 135 <sup>H</sup>	Foundations of Chemistry 1I.....	5
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
ENGL 102 <sup>H</sup>	Critical Reading & Writing .....	3
MATH 126 <sup>H</sup>	Calculus II.....	4
TOTAL HOURS .....		16

second year – fall		hours
BIOL 150 <sup>H</sup>	Principles of Molecular & Cellular Biology.....	4
EECS 268	Programming II .....	4
MATH 127 <sup>H</sup>	Calculus III .....	4
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
	KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....		17

second year – spring		hours
BIOL 152 <sup>H</sup>	Principles of Organismal Biology .....	4
EECS 210	Discrete Structures .....	4
EECS 368	Programming Language Paradigms.....	3
EECS 388	Computer Systems & Assembly Language.....	4
TOTAL HOURS .....		15

third year – fall		hours
BIOL 350	Principles of Genetics.....	3
BIOL 400	Fundamentals of Microbiology, or	
BIOL 435	Introduction to Neurobiology .....	3
EECS 448	Software Engineering I .....	4
	KU Core Elective * <sup>H</sup> .....	6
TOTAL HOURS .....		16

third year – spring		hours
BIOL Choice	Choice 1 or 2.....	3
BIOL 412	Evolutionary Biology .....	3
EECS 560	Data Structures.....	4
EECS 510	Introduction to the Theory of Computing.....	3
	KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....		16

fourth year – fall		hours
	KU Core Elective * <sup>H</sup> .....	3
EECS 678	..... Introduction to Operating Systems.....	4
EECS 581	Computer Science Design I .....	3
EECS	Senior Elective #1*** .....	3
MATH 526	Applied Mathematical Statistics I.....	3
TOTAL HOURS .....		16

fourth year – spring		hours
PHIL	Philosophy Elective **** .....	3
EECS 582	Computer Science Design II .....	3
EECS	Senior Elective #2*** .....	3
EECS	Senior Elective #3*** .....	3
	KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....		15

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Biology electives are chosen from BIOL 400, 416, 417, 435 (choice 1), BIOL 408, 414, 428 (choice 2). Students must choose one elective for either.

\*\*\* Senior Electives are EECS 563, EECS 565, EECS 638, EECS 639, EECS 647, EECS 648, EECS 649, EECS 672, EECS 690 and any EECS course 700 level or above.

\*\*\*\* Philosophy electives are PHIL 160, PHIL 320 and PHIL 375.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: MATH 526  
GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
GE 3N NATURAL SCIENCES: BIOL 150  
GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: PHIL 160, 320 OR 375

AE 6 CAPSTONE: EECS 582

# INTERDISCIPLINARY COMPUTING

**CHEMISTRY CONCENTRATION** - KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

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first year – fall		hours
CHEM 130 <sup>H</sup>	Foundations of Chemistry 1.....	5
EECS 101	New Student Seminar .....	1
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
ENGL 101	Composition.....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
TOTAL HOURS .....		17

first year – spring		hours
CHEM 135 <sup>H</sup>	Foundations of Chemistry 1I.....	5
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
ENGL 102 <sup>H</sup>	Critical Reading & Writing .....	3
MATH 126 <sup>H</sup>	Calculus II.....	4
TOTAL HOURS .....		16

second year – fall		hours
CHEM 330 <sup>H</sup>	Organic Chemistry .....	3
EECS 268	Programming II .....	4
MATH 127 <sup>H</sup>	Calculus III .....	4
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
PHSX 210 <sup>H</sup>	General Physics I for Engineers .....	3
PHSX 216	General Physics I Laboratory .....	1
TOTAL HOURS .....		17

second year – spring		hours
EECS 210	Discrete Structures .....	4
EECS 388	Computer Systems & Assembly Language.....	4
MATH 220 <sup>H</sup>	Applied Differential Equations .....	3
PHSX 212 <sup>H</sup>	General Physics II.....	3
PHSX 236	General Physics II Laboratory .....	1
TOTAL HOURS .....		15

third year – fall		hours
CHEM 530	Physical Chemistry I.....	3
EECS 368	Programming Language Paradigms.....	3
	KU Core Elective * .....	6
EECS 510	Introduction to the Theory of Computing.....	3
TOTAL HOURS .....		15

third year – spring		hours
CHEM 531	Physical Chemistry I Lab .....	2
CHEM 537	Physical Chemistry II .....	4
EECS 448	Software Engineering I .....	4
EECS 678	Introduction to Operating Systems .....	4
	KU Core Elective * H.....	3
TOTAL HOURS .....		17

fourth year – fall		hours
CHEM 698	Undergraduate Research Problems .....	2
EECS 581	Computer Science Design I .....	3
EECS 560	Data Structures .....	4
EECS	Senior Elective #1**.....	3
MATH 526	Applied Mathematical Statistics I.....	3
TOTAL HOURS.....		15

fourth year – spring		hours
EECS 582	Computer Science Design II .....	3
EECS	Senior Elective #2** .....	3
EECS	Senior Elective #3** .....	3
	KU Core Elective * H.....	3
	KU Core Elective * H.....	3
TOTAL HOURS .....		15

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
 GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES: PHSX 212  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: EECS 101, 581, AND PHSX 216

AE 6 CAPSTONE: EECS 582

### CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Senior Electives are EECS 563, EECS 565, EECS 638, EECS 639, EECS 645, EECS 647, EECS 648, EECS 649, EECS 660, EECS 662, EECS 665, EECS 672, EECS 690 and any EECS course 700 level or above.

<sup>H</sup> Honors equivalent course is available.

# INTERDISCIPLINARY COMPUTING

**GEOGRAPHY CONCENTRATION** - KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

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first year – fall		hours
EECS 101	New Student Seminar .....	1
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
	KU Core GE21.....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

first year – spring		hours
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
	KU Core GE21.....	3
MATH 126 <sup>H</sup>	Calculus II.....	4
PHSX 210 <sup>H</sup>	General Physics I for Engineers.....	3
PHSX 216	General Physics I Laboratory .....	1
	<b>TOTAL HOURS .....</b>	<b>15</b>

second year – fall		hours
EECS 268	Programming II .....	4
GEOG	Geography Basic Courses #1** .....	3
MATH 127 <sup>H</sup>	Calculus III .....	4
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>16</b>

second year – spring		hours
EECS 210	Discrete Structures .....	4
EECS 368	Programming Language Paradigms.....	3
EECS 388	Computer Systems & Assembly Language.....	4
GEOG	Geography Basic Courses #2** .....	3
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>17</b>

third year – fall		hours
EECS 448	Software Engineering I.....	4
EECS 510	Introduction to the Theory of Computing.....	3
GEOG 311	Map Conception and Development.....	4
GEOG 358	Principles of Geographical Info. Sys. ....	4
	<b>TOTAL HOURS .....</b>	<b>15</b>

third year – spring		hours
EECS 560	Data Structures.....	4
EECS 678	Introduction to Operating Systems .....	4
GEOG 558	Intermediate Geographical Info. Sys. ....	4
GEOG	Geography Elective #1*** .....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

fourth year – fall		hours
	KU Core GE22.....	3
EECS 581	Computer Science Design I .....	3
EECS	Senior Elective #1**** .....	3
GEOG 526	Remote Sensing Environment .....	4
MATH 526	Applied Mathematical Statistics I.....	3
	<b>TOTAL HOURS .....</b>	<b>16</b>

fourth year – spring		hours
EECS 582	Computer Science Design II .....	3
EECS	Senior Elective #2**** .....	3
EECS	Senior Elective #3**** .....	3
GEOG	Geography Elective #2*** .....	4
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>16</b>

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Selected from a list identified as Geography Basic Courses in the EECS Department Handbook.

\*\*\* Geography Electives are GEOG 513, GEOG 517, GEOG 560, GEOG 726 and GEOG 758.

\*\*\*\* Senior Electives are EECS 563, EECS 565, EECS 638, EECS 639, EECS 645, EECS 647, EECS 648, EECS 649, EECS 660, EECS 662, EECS 665, EECS 672, EECS 690 and any EECS course 700 level or above.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210  
GE 1.2 QUANTITATIVE LITERACY: MATH 125

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
AE 4.2 GLOBAL AWARENESS: ELECTIVE

GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
GE 2.2 ORAL COMMUNICATION: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: EECS 101, 581; AND PHSX 216

GE 3H ARTS & HUMANITIES: ELECTIVE  
GE 3N NATURAL SCIENCES: GEOG 311  
GE 3S SOCIAL SCIENCES: ELECTIVE

AE 6 CAPSTONE: EECS 582

# INTERDISCIPLINARY COMPUTING

**JOURNALISM CONCENTRATION** - KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

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first year – fall		hours
EECS 101	New Student Seminar .....	1
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
	KU Core GE21.....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

first year – spring		hours
EECS 140 <sup>H</sup>	Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup>	Programming I .....	4
JOUR 150	Stand and Deliver .....	3
MATH 126 <sup>H</sup>	Calculus II.....	4
	KU Core Elective * <sup>H</sup> .....	3
	Natural Science.....	3
	<b>TOTAL HOURS .....</b>	<b>17</b>

second year – fall		hours
EECS 268	Programming II .....	4
JOUR 300	Visual Storytelling .....	3
JOUR 302	Infomania .....	3
MATH 127 <sup>H</sup>	Calculus III .....	4
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
	<b>TOTAL HOURS .....</b>	<b>16</b>

second year – spring		hours
EECS 210	Discrete Structures .....	4
EECS 368	Programming Language Paradigms.....	3
EECS 388	Computer Systems & Assembly Language.....	4
JOUR 304	Media Writing.....	3
	<b>TOTAL HOURS.....</b>	<b>14</b>

third year – fall		hours
EECS 448	Software Engineering I.....	4
EECS 510	Introduction to the Theory of Computing.....	3
JOUR 534	Diversity in Media.....	3
JOUR 580	Environmental Journalism .....	3
MATH 526	Applied Mathematical Statistics I.....	3
	<b>TOTAL HOURS .....</b>	<b>16</b>

third year – spring		hours
EECS 560	Data Structures.....	4
EECS 678	Introduction to Operating Systems .....	4
JOUR 618	First Amendment & Society .....	3
JOUR 415	Multimedia Reporting .....	3
JOUR 419	Multimedia Editing.....	3
	<b>TOTAL HOURS .....</b>	<b>17</b>

fourth year – fall		hours
EECS 581	Computer Science Design I .....	3
EECS	Senior Elective #1**.....	3
JOUR 690	Media Innovation - Advanced Media .....	3
JOUR 608	Ethics and Professional Practice .....	3
JOUR	JOUR emphasis elective.....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

fourth year – spring		hours
EECS 582	Computer Science Design II .....	3
EECS	Senior Elective #2**.....	3
EECS	Senior Elective #3**.....	3
JOUR	JOUR emphasis elective.....	3
	KU Core Elective * <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>15</b>

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Senior Electives are EECS 563, EECS 565, EECS 638, EECS 639, EECS 645, EECS 647, EECS 648, EECS 649, EECS 660, EECS 662, EECS 665, EECS 672, EECS 690 and any EECS course 700 level or above.

<sup>H</sup> Honors equivalent course is available.

Courses may vary for strategic communications focus versus news/information focus.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: JOUR 302  
 GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ENGL 101 & JOUR 304

GE 2.2 ORAL COMMUNICATION: JOUR 150

GE 3H ARTS & HUMANITIES: ELECTIVE  
 GE 3N NATURAL SCIENCES:  
 GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: JOUR 534  
 AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: JOUR 608

AE 6 CAPSTONE: EECS 582

# INTERDISCIPLINARY COMPUTING

**PHYSICS CONCENTRATION** - KU EECS is a nationally recognized leader in cyber security, big data, computer networking, radar, artificial intelligence, and virtual reality. Graduates make their mark as engineers and computer scientists, or in the fields of law, medicine, or business. All graduates have a strong foundation in their field along with problem solving skills that prepare them to face new technological challenges. See more: [eecs.ku.edu](http://eecs.ku.edu)

Information appearing in this guide is subject to change. Please talk with your departmental adviser about degree requirements on a regular basis. A recommended 5-year course sequence is also available.

first year – fall	hours
EECS 101 New Student Seminar .....	1
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup> Programming I .....	4
KU Core GE21.....	3
MATH 125 <sup>H</sup> Calculus I.....	4
KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....	15

first year – spring	hours
EECS 140 <sup>H</sup> Introduction to Digital Logic Design, or	
EECS 168 <sup>H</sup> Programming I .....	4
KU Core GE21.....	3
MATH 126 <sup>H</sup> Calculus II.....	4
PHSX 210 <sup>H</sup> General Physics I for Engineers.....	3
PHSX 216 General Physics I Laboratory .....	1
TOTAL HOURS .....	15

second year – fall	hours
EECS 268 Programming II .....	4
MATH 127 <sup>H</sup> Calculus III .....	4
MATH 220 <sup>H</sup> Applied Differential Equations .....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra.....	2
PHSX 212 <sup>H</sup> General Physics II.....	3
PHSX 236 General Physics II Laboratory .....	1
TOTAL HOURS .....	17

second year – spring	hours
EECS 210 Discrete Structures .....	4
EECS 368 Programming Language Paradigms.....	3
EECS 388 Computer Systems & Assembly Language.....	4
PHSX 313 General Physics III .....	3
KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....	17

third year – fall	hours
EECS 448 Software Engineering I.....	4
EECS 510 Introduction to the Theory of Computing.....	3
PHSX 503 Undergraduate Research .....	2
PHSX 521 Mechanics .....	3
KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....	15

third year – spring	hours
KU Core GE22.....	3
EECS 560 Data Structures.....	4
EECS 678 Introduction to Operating Systems .....	4
PHSX 511 Introductory Quantum Mechanics .....	3
PHSX 316 Intermediate Physics Lab .....	1
TOTAL HOURS .....	15

fourth year – fall	hours
EECS 581 Computer Science Design I .....	3
EECS Senior Elective #1**.....	3
MATH 526 Applied Mathematical Statistics I.....	3
PHSX 531 Electricity and Magnetism .....	3
PHSX Physics Elective #1***.....	3
TOTAL HOURS .....	15

fourth year – spring	hours
EECS 582 Computer Science Design II .....	3
EECS Senior Elective #2**.....	3
EECS Senior Elective #3**.....	3
PHSX Physics Elective #2***.....	3
KU Core Elective * <sup>H</sup> .....	3
TOTAL HOURS .....	15

## CURRICULUM NOTES

\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

\*\* Senior Electives are EECS 563, EECS 638, EECS 645, EECS 647, EECS 648, EECS 649, EECS 660, EECS 662, EECS 665, EECS 672, EECS 690 and any EECS course 700 level or above.

\*\*\* Physics electives are chosen from Physics courses numbered 600 level and above.

<sup>H</sup> Honors equivalent course is available.

## CORE DISTRIBUTION

GE 1.1 CRITICAL THINKING: PHSX 210  
GE 1.2 QUANTITATIVE LITERACY: MATH 125

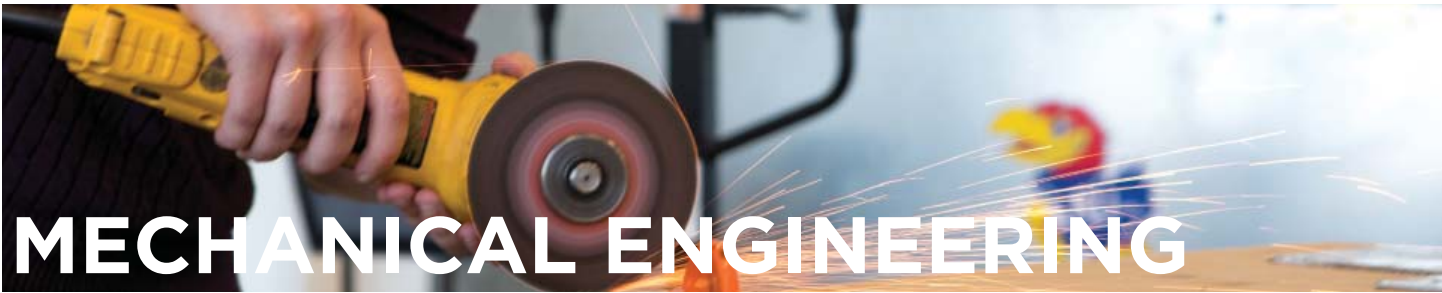
GE 2.1 WRITTEN COMMUNICATION: ELECTIVE  
GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
GE 3N NATURAL SCIENCES: PHSX 212  
GE 3S SOCIAL SCIENCES: ELECTIVE

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY: EECS 101, 581; AND PHSX 216

AE 6 CAPSTONE: EECS 582



Whether it's advanced materials, biomechanics, emerging transportation technologies, or a wide variety of other fields, mechanical engineers have a vast network of career opportunities available to them due to the remarkable versatility of this degree. From award winning race cars and energy efficient vehicle development to advanced spinal implants and an easier path to recovery from knee surgery, mechanical engineering at KU offers a wide variety of opportunities, including robust offerings in bioengineering and biomechanics. See more: [me.engr.ku.edu](http://me.engr.ku.edu).

Information appearing in this guide is subject to change. Please talk with your departmental adviser about degree requirements on a regular

**first year – fall**

	hours
ENGL 101 Composition.....	3
MATH 125 <sup>H</sup> Calculus I.....	4
ME 228 Computer Graphics.....	3
CHEM 150 Chemistry for Engineers.....	5
ME 101 Mechanical Engineering Freshman Seminar.....	1
<b>TOTAL HOURS.....</b>	<b>16</b>

**first year – spring**

ENGL 102 <sup>H</sup> Critical Reading & Writing.....	3
MATH 365 Statistics (or MATH 526).....	3
MATH 126 <sup>H</sup> Calculus II.....	4
ME 208 Intro. to Digital Comp. Methods in Mech. Engr.....	3
PHSX 210 <sup>H</sup> General Physics I for Engineers.....	3
PHSX 216 General Physics I Laboratory.....	1
<b>TOTAL HOURS.....</b>	<b>17</b>

**second year – fall**

MATH 127 <sup>H</sup> Calculus III.....	4
ME 211 Statics & Intro. to Mechanics.....	3
ME 306 Science of Materials.....	3
KU CORE PHIL***, ECON**, or remaining KU CORE.....	3
PHSX 212 <sup>H</sup> General Physics II.....	3
PHSX 236 General Physics II Laboratory.....	1
<b>TOTAL HOURS.....</b>	<b>17</b>

**second year – spring**

KU CORE PHIL*, ECON**, or remaining KU CORE.....	3
MATH 220 <sup>H</sup> Applied Differential Equations.....	3
MATH 290 <sup>H</sup> Elementary Linear Algebra.....	2
ME 311 Mechanics of Materials.....	3
ME 312 Basic Engineering Thermodynamics.....	3
KU Core Elective <sup>H</sup> .....	3
<b>TOTAL HOURS.....</b>	<b>17</b>

**third year – fall**

KU CORE PHIL*, ECON**, or remaining KU CORE.....	3
ME 307 Engineering Materials Lab.....	2
ME 320 Dynamics.....	3
ME 321 Dynamics Simulations.....	1
ME 412 Thermal Systems.....	3
ME 508 Numerical Analysis.....	3
<b>TOTAL HOURS.....</b>	<b>15</b>

**third year – spring**

	hours
EECS 316 Circuits, Electronics & Instrumentation.....	3
EECS 318 Circuits & Electronics Laboratory.....	1
ME 510 Fluid Mechanics.....	3
ME 501 Mechanical Engineering Design Process.....	2
ME 628 Mechanical Design.....	3
ME 661 Finite Element Method for Stress Analysis.....	3
<b>TOTAL HOURS.....</b>	<b>15</b>

**fourth year – fall**

ME 455 Mechanical Measurements & Experimentation.....	4
ME 612 Heat Transfer.....	3
ME 682 System Dynamics & Control Systems.....	3
ME Adv. Engr. Elective (List 1)/Capstone Option***.....	3-5
List 2 Elective*****.....	3
<b>TOTAL HOURS.....</b>	<b>16-18</b>

**fourth year – spring**

ME Capstone Design Option ***.....	2-4
ME Advanced Engineering Elective (List 1).....	3
List 2 Elective *****.....	3
KU Core Electives.....	6
<b>TOTAL HOURS.....</b>	<b>14-16</b>

**Premedical Plan**

143 credit hours; the following courses are required in addition to the Mechanical Engineering curriculum:

Chemistry – Take CHEM 130 and CHEM 135 instead of CHEM 150;

Advanced Chemistry – CHEM 330, CHEM 331, CHEM 335, CHEM 336;

Biological Science – BIOL 150, BIOL 152;

Biochemistry I, BIOL 636, is required for application to some medical school programs.

**Combined Mechanical Engineering BS & MBA in Business**

A student who wants to combine business with engineering may enroll in a program leading to a bachelor's degree in Mechanical Engineering and an MBA in Business. Full-time enrollment and careful planning enables a student to earn the two degrees in 4.5 years. Consult the Department of Mechanical Engineering for more information.

**CURRICULUM NOTES**

\* Ethics electives are PHIL 160, PHIL 180, or PHIL 320.

\*\* Economics elective may be ECON 104, ECON 142, or ECON 144.

\*\*\* Courses chosen in consultation with adviser. Options include: Automotive; Biomechanics; Energy/ Sustainability; Thermo-fluids; and Mechanical Design.

\*\*\*\* Courses chosen from an approved list available from the department.

128 hour credit hours required for MS-ME, but up to 6 hrs may be waived through non-course means. See ME advisor for more information.

<sup>H</sup> Honors equivalent course is available.

**CORE DISTRIBUTION**

GE 1.1 CRITICAL THINKING: PHSX 210  
GE 1.2 QUANTITATIVE LITERACY: MATH 125

GE 2.1 WRITTEN COMMUNICATION: ENGL 101 and ENGL 102<sup>H</sup>  
GE 2.2 ORAL COMMUNICATION: ELECTIVE

GE 3H ARTS & HUMANITIES: ELECTIVE  
GE 3N NATURAL SCIENCES: CHEM 150  
GE 3S SOCIAL SCIENCES: ECON 104<sup>H</sup>, 142<sup>H</sup> OR 144<sup>H</sup>

AE 4.1 DIVERSITY IN UNITED STATES: ELECTIVE  
AE 4.2 GLOBAL AWARENESS: ELECTIVE

AE 5 ETHICS & SOCIAL RESPONSIBILITY:  
PHIL160<sup>H</sup>, PHIL 180  
OR PHIL 320

AE 6 CAPSTONE: ME 642; or ME 640 and ME 641/643

# PETROLEUM ENGINEERING

Petroleum Engineering plays a major role in shaping modern society by providing advanced technology to keep the supply and demand of crude oil met at the national and global level. Drilling technologies are not only used for oil--precious resources such as natural gas are also extracted using petroleum engineering. See more: [cpe.engr.ku.edu](http://cpe.engr.ku.edu).

Information appearing in this guide is subject to change. Please talk with your departmental adviser about degree requirements on a regular basis. A recommended 5-year course sequence is also available.

first year – fall		hours
C&PE 117	Energy in the Modern World .....	1
CHEM 130 <sup>H</sup>	Foundations of Chemistry I .....	5
ENGL 101	Composition * .....	3
MATH 125 <sup>H</sup>	Calculus I.....	4
	KU Core Elective <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>16</b>

first year – spring		hours
GEOL 101	The Way the Earth Works.....	3
C&PE 127	Intro. to Petro. Engineering Profession .....	1
CHEM 135 <sup>H</sup>	Foundations of Chemistry II .....	5
ENGL 102 <sup>H</sup>	Critical Reading & Writing * .....	3
MATH 126 <sup>H</sup>	Calculus II .....	4
	<b>TOTAL HOURS .....</b>	<b>16</b>

second year – fall		hours
C&PE 217	Intro. to Petroleum Drilling Engineering.....	2
C&PE 219	Drilling Fluids Laboratory .....	1
MATH 290 <sup>H</sup>	Elementary Linear Algebra.....	2
MATH 220 <sup>H</sup>	Applied Differential Equations .....	3
GEOL 103	Fundamentals of Geology Laboratory .....	2
PHSX 210 <sup>H</sup>	General Physics I for Engineers.....	3
PHSX 216	General Physics I Laboratory .....	1
	KU Core Elective ** <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>17</b>

second year – spring		hours
C&PE 327	Reservoir Engineering I .....	4
C&PE 325	Numerical Methods and Statistics .....	3
MATH 127 <sup>H</sup>	Calculus III .....	4
ME 312	Basic Engineering Thermodynamics .....	3
PHSX 212	General Physics II.....	3
PHSX 236	General Physics II Laboratory .....	1
	<b>TOTAL HOURS .....</b>	<b>18</b>

third year – fall		hours
C&PE 511	Momentum Transfer .....	3
C&PE 527	Reservoir Engineering II .....	4
C&PE 528	Well Logging.....	3
ME 211	Statics.....	3
ENGL 203	Topics in Reading and Writing: .....	
	Writing for Engineers.....	3
	<b>TOTAL HOURS.....</b>	<b>16</b>

third year – spring		hours
C&PE 522	Economic Appraisal of C&PE Projects.....	2
C&PE 618	Secondary Recovery.....	4
C&PE 619	Petroleum Engineering Lab I .....	3
ENGR ELECT	Engineering or Science Elective.....	3
GEOL 331/591	Sedimentology and Surface Processes .....	4
	<b>TOTAL HOURS .....</b>	<b>16</b>

fourth year – fall		hours
ENGR ELECT	Engineering Elective.....	3
C&PE 627	Petroleum Production.....	3
C&PE 625	Unconventional Reservoirs .....	3
GEOL 535	Petroleum & Subsurface Geology.....	4
	KU Core Elective ** <sup>H</sup> .....	3
	<b>TOTAL HOURS .....</b>	<b>16</b>

fourth year – spring		hours
C&PE 617	Drilling and Well Completion .....	3
C&PE 628	Petroleum Engineering Design.....	3
C&PE 624	Process Safety and Sustainability.....	3
Basic Science or	Engineering Elective .....	3
	KU Core Electives ** <sup>H</sup> .....	3
	<b>TOTAL HOURS.....</b>	<b>15</b>

## CORE DISTRIBUTION

**GE 1.1 CRITICAL THINKING:** PHSX 210 or PHSX 211  
**GE 1.2 QUANTITATIVE LITERACY:** MATH 125

**GE 2.1 WRITTEN COMMUNICATION:** ENGL 101 & ENGL 102  
**GE 2.2 ORAL COMMUNICATION:** ELECTIVE

**GE 3H ARTS & HUMANITIES:** ENGL 203  
**GE 3N NATURAL SCIENCES:** CHEM 130  
**GE 3S SOCIAL SCIENCES:** ELECTIVE

**AE 4.1 DIVERSITY IN UNITED STATES:** ELECTIVE  
**AE 4.2 GLOBAL AWARENESS:** ELECTIVE

**AE 5 ETHICS & SOCIAL RESPONSIBILITY:** C&PE 522 & C&PE 624

**AE 6 CAPSTONE:** C&PE 628

### CURRICULUM NOTES

\* Or approved KU Core Communication course or experience.

\*\* Students must ensure the electives they choose fulfill all remaining KU Core requirements.

<sup>H</sup> Honors equivalent course is available.



# BIOENGINEERING

The KU School of Engineering offers a certificate in Bioengineering to engineering and computer sciences undergraduates. This certificate allows students to develop a foundation in bioengineering leading to an undergraduate research or design capstone. The certificate requires four courses plus the research or design capstone.

To complete this certificate a student will also need to complete their degree in one of these disciplines. To be admitted, a student would need to have completed:

- 30 credit hours, majoring in an engineering discipline with a minimum 2.0 GPA, and
- Math 127 Calculus III (or equivalent)

## Certificate Requirements

### Bioengineering Core, 1 course:

- C&PE 656 Introduction of Biomedical Engineering
- ME 633 Introduction to Biomechanics
- EECS 730 Introduction to Bioinformatics

### Bioengineering Electives, 3 courses:

*Biological Sciences: At least one course from:*

- BIOL 150 Prin. Molecular & Cellular Biology
- BIOL 240 Fundamentals of Human Anatomy
- BIOL 246 Principles of Human Physiology
- BIOL 646 Mammalian Physiology

*Advanced Electives: At least one course from:*

- Chem 330 Organic Chemistry I or Chem 380 Organic Chemistry I, honors
- BIOL 600 Introduction to Biochemistry
- C&PE 752 Tissue Engineering
- C&PE 657 Polymer Science and Technology
- ME 750 Biomechanics of Human Motion
- ME 751 Experimental Methods in Biomechanics
- ME 753 Bone Biomechanics
- ME 754 Biomedical Optics
- ME 755 Computer Simulation in Biomechanics
- ME 756 Biofluid Dynamics
- ME 757 Biomechanical Systems
- ME 758 Physiological System Dynamics

- ME 767 Molecular Biomimetics
- ME 760 Biomedical Product Development
- ME 765 Biomaterials
- ME 790 Biomedical Microdevices
- EECS 644 Digital Signal Processing
- EECS 730 Introduction to Bioinformatics
- EECS 740 Digital Image Processing
- CE 773 Biological Principles of Environmental Engineering
- ME 640 Mechanical Engineering – Design Project (if taken with ME 643)

### Research or Design, 1 course

*(These should be approved by the bioengineering program prior to taking them):*

- Capstone Design in Bioengineering/Biomechanics:
  - ME 643 Mechanical Engineering – Design Project Option
  - Other senior level, capstone design course with a bioengineering-focused project
- Undergraduate Research in Bioengineering:
  - C&PE 651/661, C&PE 671, ME 360/361, EECS 399/498, AE 592, CE490, ARCE 690/691, or EPSX 501/503

## How to sign up

Here are the steps you need to do to enroll in the certificate:

1. Go to: <http://enr.ku.edu/forms>

2. Select “Change of Engineering Major”

3. Fill out the form, keeping your major the same and selecting “Bioengineering Undergraduate Certificate” for “Are you adding a undergraduate certificate?”

4. The form to get your research course, REU experience, or other activity approved is below. Your research or design component needs prior approval.